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ABSTRACT

Various approaches to introductory courses in social work research in Canada are described. Objectives of the report are to promote informational exchange among instructors in schools of social work, to provide data on common practices employed in the instruction of introductory research, to encourage innovation and experimentation, and to aid in policy recommendations for minimum standards for introductory research courses. Major sections present course outlines, assignments, and examinations. Four approaches serve as categories for course outlines--the logic of inquiry applied to social work problems, methodology and statistics, understanding and utilization of research, and a combined approach. Assignments fall into the category of non-statistical or statistical. Non-statistical assignments focus on research design and analysis and research concepts while statistical examples focus on computer and non-computer methods. Examples of examinations are categorized according to emphasis on conceptual thinking, research design, or statistics (theory and computational). Examples are drawn from the University of Calgary, Dalhousie University, Memorial University of Newfoundland, McGill University, the University of British Columbia, the University of Regina, and the University of Toronto. (KC)

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INTRODUCTORY COURSES IN SOCIAL WORK RESEARCH

IN CANADA:

SOME EXAMPLES

BY

CANADIAN ASSOCIATION OF SCHOOLS OF SOCIAL WORK

RESEARCH COMMISSION

SUB-COMMITTEE ON RESEARCH CURRICULA

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I INTRODUCTION

A. Purpose

This report, which describes various approaches to Introductory courses in social work research, in Canada, has four key objectives:

to promote teaching material information exchange among introductory level research instructors in schools of social work;

to provide baseline data on common practices employed in the instruction of introductory level research courses;

to encourage innovation and experimentation by instructors;

to assist the Research Commission of CASSW in establishing some base-line data from which to formulate policy recommendations for minimum standards for introductory level research courses.

The Commission was impressed with the submission responses from the schools of social work throughout Canada. Selection of materials for inclusion in this report proved difficult. Criteria for selection included comprehensiveness, clarity of articulation, diversity, originality and completeness.

In its review of the materials, the Committee was impressed with both the commonalities across schools and with the apparent innovation and experimentation which is occurring. We hope that we have done justice to the materials submitted in our editorial reductions and hope that this collection is helpful to research instructors in schools of social work across the country.

THE SUB-COMMITTEE ON RESEARCH CURRICULA
of THE RESEARCH COMMISSION,
CANADIAN ASSOCIATION OF SCHOOLS OF SOCIAL WORK

CHAIRMAN: Daniel W. O'Brien, D.S.W. (Dalhousie University),

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II COURSE OUTLINES

A. The Logic of Inquiry Applied to Social Work Problems

1. The Category

A common approach in teaching introductory courses in social work research is that of focusing on the logic of inquiry in promoting systematic inquiry into social work problems. The focus is on critical thinking and the logic of social science research.

2. Example

- (a) University of Calgary
The Faculty of Social Welfare
(1976-77)
SOWK 341-Sec.01

Social Work: Its Social Science Foundations

SOWK 341 is designed to be an introductory content course on the social sciences. The emphasis is on the word science as this course provides the foundation for SOWK 441, "The Scientific Orientation to Social Work Practice", and SOWK 541, "Dimension of Research in Social Work Practice". One overall goal for the course is to provide students with knowledge of the scientific method, a conceptual understanding of the primary terminology of science and the inter-relationships between theory, method and "reality". Both the advantages and limitations of science will be examined.

The second goal is the beginning of developing a set of attitudes and values in students towards certain practice principles. The quote which follows expresses the objectives of the research courses in the B.S.W. programme.

"The task of professional education is not to train a technician but to provide the student with a habit of mind toward knowledge values and skills that will enable him to ask pertinent questions not only today but ten and twenty years from now and to know how to seek out the answer". (Coughlin, Innovations in Teaching Social Work Practice, 1969).

It is our aim that students develop an attitude that requires them to value a critical examination and evaluation of their own method, techniques and thinking. That students examine objectively and critically the society of which he is a part. That students learn to understand their own attitudes and values; what the basis for these thoughts and feelings are and the potential bias they might represent. In this sense the scientific method and research represent a way of thinking that attempts to minimize bias and stresses objectivity. By understanding the principles of this way of "knowing", students should be better able to undertake the critical self-evaluation which is crucial to effective social work practice.

Thus this course will aim at striving for an attitude and approach that, in addition to many other aspects, embraces a scientific orientation to social practice. We believe this is not in contradiction to our other aims in social work education which strive for the innovative and creative aspects in the practitioner's execution of his or her art. On the contrary, we believe this is a rather necessary complement to it.

In summary, the world we live in has become increasingly complex. No issue can easily be viewed as black or white. The shade of grey one chooses to believe is often the result of factors other than scientific objectivity or "knowledge" in its pure sense. Many writers have commented on the different types of pressures which curtail the advancement of scientific knowledge. Commonor (Science and Survival, 1965) has observed that if political and public pressures restrict the freedom of the scientists' right to pursue the truth and to make public their findings then, rather than being the salvation of mankind, science may destroy the human race, for the fundamental self-correcting process is not operating. In a similar view, one of the leading scientists in the Soviet Union, Sakharov said,

"Intellectual freedom is essential to human society-freedom to obtain and distribute information, freedom for open-minded and unfearing debate the freedom from pressure by officialdom and prejudices. Such a trinity of freedom of thought is the only guarantee against an infection of people by mass myths, which in the hands of treacherous hypocrites and demagogues can be transformed into bloody dictatorship."

This statement has implications far beyond scientific work and thought. It would appear to be a critical issue in the field of Social Work (as all aspects of life for that matter). The important issue is the context in which science (or social work) must operate. In SOWK 341, one highly stressed theme will be the societal pressures which are placed on research and how this type of influence can generalize to other professional fields.

Objectives

Attitudes: To assist students.

To appreciate research as an integral dimension of practice, as an essential tool in the armament of the practitioner in knowledge-building and practice-development. (Non-testable)

To appreciate the contribution that research can make to practice, and vice versa. (Non-testable)

To become and remain interested in the growing body of practice theory and related social science knowledge in order to consult and/or apply it wherever and whenever appropriate. (Non-testable)

To sharpen the discernment of value in existing knowledge; critically assess the state of theory and knowledge with a sense of risk and commitment to excellence. (Non-testable)

To be consistent in accountability; to be reliable and responsible for one's own contribution to the Social Work profession. (Future)

To value and pursue objectivity, honesty, and reduction of unwarranted bias in all professional activities. (Future)

Knowledge: To assist students.

To be familiar with the nature of social welfare and social work research and its place in the totality of social science research. (Exams)

To be familiar with the nature of science and the function of research and its relationship to science. (Exams)

To understand the scientific method as only one way

to acquire knowledge, to be cognizant of the limitations of scientific inquiry and of the tremendous possibilities for error. (paper, exams)

To be familiar with the nature and function of concepts, hypotheses, and theories. (Exam)

To understand the research process as an ongoing spiral from existing knowledge through deductive logic to hypotheses, to testing by empirical methods and through inductive logic back to knowledge slightly modified from that with which we began. (paper)

To become cognizant of the implications for social work practice, emerging from research. (future)

Skills

Skills are almost synonymous with knowledge in SOWK 341. The basic requirement is a conceptual understanding of a wide range of ideas and terms including statistics. It must be emphasized that SOWK 341 is NOT a statistics course. Some statistical concepts are necessary to an understanding of the scientific method, but the student who wishes to know the mathematics of statistics will need to receive that knowledge elsewhere.

Conceptual Thesis

First and foremost in our approach to research for social practice is an orientation that reflects our philosophy that scientific knowledge is but one kind of knowledge in the arsenal of the practitioner. In contrast to the (social) scientist, the social work practitioner is concerned with the uniqueness of the client-system which confronts him here and now. As Greenwood observes:

The social pressure for relatively quick action, even though based on insufficient validated theory, confronts every practice. The caution of the scientist, appropriate in the laboratory, is a luxury which only persons with no responsibility for action can afford.¹

-
1. Greenwood, E. "Social Science and Social Work: A theory of Their Relationship", The Social Service Review, Vol. XXXIX, No. 1, p. 25.

In other words, the social work practitioner in contrast to the social scientist, does act on the basis of what data or what information is actually available, not on what is ideally desirable.

The first course in the research sequence must attempt to imbue students with an appreciation for, and a positive attitude and orientation toward the research dimension in social practice. In addition, and as part of this thrust, students will develop a critically analytical attitude toward practice, the structures in which they function and the society of which they are a part.

Based on the premise² that most social work students will become practitioners who are only minimally engaged in designing and executing research, our orientation is toward an emphasis on generating "an appreciation of the thoughtways of a scientific discipline...considered desirable on the part of the practitioners of a science-based art."³

This research course puts major emphasis on the function, assumptions, and basic approach of science; the relationship of social science to social work practice; the nature and role of research in science; the nature and function of concepts, hypotheses and theory in research, and other topics like these.

Research and its utilization is also discussed as a tool in the arsenal of the change-oriented social practitioner. This phenomenon is considered particularly in the societal arena, where community research in its operational application must be perceived as a potentially powerful weapon to either bring about change, or to resist it.

In comparing the stances of the social work practitioners and the social work practitioner-researcher, emphasis is laid on the different goal orientations, the implicit and explicit values of the person, and of the profession and the society, of which he forms a part. The ethical implications of research in practice are discussed and

2. See The Research Method in Social Work Education, Vol. IX of the Curriculum Study, Edited by Werner W. Boehm, CSWE, 1959, pp. 3-5.

3. Greenwood, E. Lectures in Research Methodology for Social Welfare Students, University of California, Berkeley, 1961. (Mimeographed)

analyzed.

Sequence

The course is divided into a conceptual and experiential part. This division is necessarily arbitrary and is only brought about for scheduling purposes. For, in fact, the course hopes to show the integration of these two parts.

Conceptual

Experiential

Part I	Introduction and some basic inputs on and discussion of values and ethics in research and science. We will deal with personal, professional, societal and scientific values and their implications for social work research and practice.	Individually or in groups, students are asked to emerge themselves into a particular social phenomenon (issue, problem), to observe and gather some initial, impressionistic data.
Part II	Inputs on and discussion of the topic of research. This part will deal with concepts, hypotheses, and theory as the important sub-parts of the "thinking part" of research.	From the initial experience the student or student group will attempt to conceptualize a particular part of the phenomenon under study, create a purpose or focus for their study, and formulate a hypothesis(es).
Part III	Inputs on, and discussion of the major methods in research (designs) and their application to human issues/problems.	Selection of the appropriate research design for the particular study to be undertaken by the student or student group.
Part IV	Inputs on, and discussion of the techniques of research: sampling, data collection, measurement, data analysis, reporting.	Execution of the research designed by the student or student group and submission of a brief, critical research report.

Week-By Week Schedule

<u>Week</u>	<u>Topic</u>	<u>Experiential</u>
(1-13)	Introduction to the Research Process	1.Immersion Observation Selection of Phenomenon (Issue, Problem) for Study
	Values	2.Conceptualization Definition of Concepts
	Knowledge	Formulation of Hypothesis(es)
	Knowledge	Selection of Study Design
	Knowledge	Selection of Techniques: sample, data collecting & analysis
	Design	4.Executing of Study: Data Collection Data Analysis
	Techniques	5.Reporting: Submission of brief Research Report
	Review and Summary	

B. Methodology and Statistics

1. The Category

A common approach in teaching introductory courses in social work research is that of focusing on methodology and statistics. While not aiming at the production of researchers, an objective is that of developing some basic research skills.

2. Examples

(a) Dalhousie University

The Maritime School of Social
Work (1976-77) MSW53R
Dr. D. O'Brien

Basics of Social Work Research

The Basic Research Course is offered over two semesters. In the Fall semester Research Methodology receives central attention, while in the Spring semester the focus switches to Basic Statistics.

The Fall semester is divided into two learning units:

Unit I -- Social Work Research: Introduction
Elements, Issues, Current Directions

3 Sessions

Unit II -- Research Methodology and Process

10-12 Sessions

The Spring semester contains one learning unit:

Measurement in Social Work Research - Basic
Statistics

14 Sessions

STATEMENT OF COURSE OBJECTIVES:

Objectives will be stated in both General and Specific terms. General objectives describe the overall or combined expectations for Course I and II; Specific expectations describe the expectations which prevail for each unit of learning.

GENERAL OBJECTIVES

Upon completion of this course it is expected that the student will have acquired:

-An appreciation of Social Work Research within the contextual framework of social work as a science-art based profession.

-An understanding of Research methods sufficient enough to allow for participation in research production.

COURSE STRUCTURE

The scheduled weekly class sessions will be developed as lecture and discussion periods. These will be supplemented by regular problem-solving sessions led by a Graduate Assistant.

Assigned readings have a prominent role in this course, and it is highly unlikely that students will excel without active and analytic involvement in the readings as well as the classes. Course content in the two semesters is relatively self-contained, but there will be cross-referencing.

TEXTBOOKS

Fall Semester

Basic Text: Polansky, N.A. SOCIAL WORK RESEARCH, Revised Edition. (University of Chicago Press, Chicago, 1975).

Supplementary

Texts: Goldstein, H.K. RESEARCH STANDARDS AND METHODS FOR SOCIAL WORKERS, Revised Edition (Chicago: Whitehall Company 1968).

Selltiz, C.; Jahoda, M.; Deutch, M.; and Cook, S.W. RESEARCH METHODS IN SOCIAL RELATIONS. (Toronto: Holt, Rinehart and Winston, 1959.)

Kerlinger, F.N. FOUNDATIONS OF BEHAVIOURAL RESEARCH Second Edition. (New York: Holt,

Rinehart and Winston Inc. 1973).

Spring Semester

Basic Text: Kolstoe, R.H. INTRODUCTION TO STATISTICS FOR THE BEHAVIOURAL SCIENCES. Revised Edition (Georgetown Ont.: Irwin Dorsey Ltd. 1973).

Supplementary

Texts: Blalock, H.M. Jr. SOCIAL STATISTICS. Second Edition (Toronto: McGraw-Hill Book Co. 1972).

Siegal, S. NON-PARAMETRIC STATISTICS. Toronto, McGraw-Hill Book Co.)

FALL SEMESTER

COURSE OUTLINE

UNIT I - SOCIAL WORK RESEARCH: INTRODUCTION, ISSUES, REVIEWS, CURRENT DIRECTIONS

SPECIFIC OBJECTIVES

Upon completion of this unit it is expected that the student will have acquired:

- An appreciation for the relevance of Social Work Research.
- An appreciation of the status of social work knowledge base and the place of research in furthering that base.
- An appreciation of the underlying logic of scientific enquiry.

SESSION # 1

Discussion of course outline and objectives. Introductory presentation on the relevance, function and nature of Social Work Research.

References

Greenwood, Ernest. "Social Work Research, A Decade of Reappraisal," SOCIAL SERVICE REVIEW, VOL. XXXI, NO. 3, (Sept. 1957) pp. 311-320.

----- "Social Science and Social Work:
A Theory of Their Relationship," SOCIAL SER-
VICE REVIEW, VOL. XXIX, (1955) pp.20-33.

Gordon, William. "Research and Social Work Practi-
ce," PAPER presented at Pittsburg: Vete-
rans Administration Hospital, 1958. (Found
in M.S.S.W. Library).

MacDonald, Mary. "Social Work Research: A Pers-
pective: SOCIAL WORK RESEARCH, Norman A.
Polansky (ed.) The University of Chicago
Press. Chicago. 1960. pp.1-23.

Polansky, Norman A. "Introduction: Social &
Historical Context," in SOCIAL WORK RESEARCH,
ed. N. Polansky, Revised Edition, 1975.
pp.1-17.

----- "Research In Social Work,"
ENCYCLOPEDIA OF SOCIAL WORK, VOL. II (16th
ISSUE). 1971. pp.1098-1106.

SESSION # 2 and 3

Overview of important definitions and Social Work
Research issues.

- Knowledge base in Social Work
- Social Work and Social Science
- Directions in Social Work Research

References

Hearn, Gordon. THEORY BUILDING IN SOCIAL WORK,
University of Toronto Press. 1958. pp.1-11
and pp.19-26.

Bartlett, Harriet M. "The Place and Use of
Knowledge in Social Work Practice," SOCIAL
WORK, VOL. IX, NO. 3 (JULY, 1964). pp.36-
46.

Kogan, Alfred J. "The Nature of Social Work
Knowledge," NEW DIRECTIONS IN SOCIAL WORK,
Cora Kasius (ed.) Harper and Brothers, New
York, 1964, pp.194-214.

Kadushin, Alfred. "The Knowledge Base of Social

Work," ISSUES IN AMERICAN SOCIAL WORK. Alfred J. Kahn (ed.) Columbia Univ. Press. New York. 1959. pp.219-241.

Murphy, Marjorie. "Report of the Conference," BUILDING SOCIAL WORK KNOWLEDGE. N.A.S.W. 1968. pp.76-115.

Stein, Herman. "Social Science in Social Work Practice And Education," EGO PSYCHOLOGY AND DYNAMIC CASEWORK. Pared, Howard J. (ed.) Family Service Association of America. New York. pp.226-240.

Thomas, Edwin J. "Types of Contributions Behavioral Science Makes to Social Work," BEHAVIORAL SCIENCE FOR SOCIAL WORKERS, Edwin J. Thomas (ed.) Free Press, New York, 1967. pp.3-13.

Polansky, Norman A. "Theory Construction And The Scientific Method" in SOCIAL WORK RESEARCH. (ed.) N. Polansky, Revised Edition, 1975, pp. 18-37.

Boehm, Werner. "Social Work-Science and Art" SOCIAL SERVICE REVIEW, VOL. XXXV. (June 1961) pp.114-152.

Halmos, Paul. THE FAITH OF THE COUNSELLORS. Schocken, New York. 1966. pp.106-122.

Teicher, Morton. "The Culture of Concept", SOCIAL CASEWORK, VOL. XXXIX. (October, 1958). Also printed in THE EXPANDING THEORETICAL BASE OF CASEWORK. Family Service Association of America. 1954. pp.28-32.

Gordon, William. "The Future of Social Work Research", SOCIAL WORK VOL. III (October, 1958) pp.99-106.

----- TOWARD BASIC RESEARCH IN SOCIAL WORK. M.S.S.W. Library. HV 11 G67.

Shyne, Ann. "Social Work Research - An Overview and Appraisal," CHILD WELFARE, VOL. XLIII (March, 1964). pp.109-116.

Goldstein, Harris K. RESEARCH STANDARDS AND METHODS FOR SOCIAL WORKERS. Whitehall Company. Chicago. Revised, 1968. Chapter 2.

UNIT II - RESEARCH METHODOLOGY AND PROCESS

SPECIFIC OBJECTIVES

Upon completion of this unit it is expected that the student will have acquired sufficient knowledge of scientific method to be aware of what is required to:

- Identify and formulate a practice problem in researchable form.
- See the problem as part of a more general area of concern for the agency and the profession.
- Determine the data needed to answer the question and know how such data are to be obtained.

SESSION # 4

Research Cycle

- Introduction and Overview of the stages of the Research Cycle.
- Stage I -Problem Identification and Formulation
- Stage II -Research Design
- Stage III -Planning for and Collection of Data
- Stage IV -Analysis of Data
- Stage V -Findings and Conclusions

References

- Goldstein, Harris K. RESEARCH STANDARDS AND METHODS FOR SOCIAL WORKERS. The Hauser Press. New Orleans. 1963. Chapters I & II.. Revised Edition 1968. Chapters I & III.
- Selltiz, C.; Jahoda, M; Deutch, M.; Cook F. RESEARCH METHODS IN SOCIAL RELATIONS. Holt, Rinehart, and Winston, New York, 1967. Chapter I.
- Hearn, Gordon. THEORY BUILDING IN SOCIAL WORK. University of Toronto Press. Toronto. 1958, Chapter II.

SESSION # 5 AND # 6

Stage I - Problem Identification and Formulation

-Elements Of

-Nature and Use of Concepts and Theories
at the Problems Formulation Stage

-Hypothesis Formulation

-Operational Definitions

References

Kerlinger, Fred N. FOUNDATIONS OF BEHAVIORAL,
RESEARCH. Holt, Rinehart, and Winston, Inc.
New York. 1964 and Second Edition, Chapters
II & III.

Selltiz, C.; Jahoda, M., et al. Chapter II.

Ripple, Lilian, "Problem Identification and For-
mulation," SOCIAL WORK RESEARCH, Norman A.
Polansky, (ed.). The University of Chicago
Press. Chicago 1966.

Goldstein, Harris. Chapter III (1963 edition)
Chapter IV (1968 edition)

SESSION #,7

Stage II - Research Design

References

Tripodi, T.; Fellin, P., Meyer, Meyer, H.J. THE
ASSESSMENT OF SOCIAL RESEARCH. F.E. Peacock
Publishers, Inc., Illinois, 1969. Chapter II

Finestone, Samuel; Kahn, Alfred J. "The Design of
Research," SOCIAL WORK RESEARCH. Norman A.
Polansky (ed.) Revised Ed. The University
of Chicago Press. Chicago, 1975.

Goldstein, Harris. Chapter XIV (1963 edition)
Chapter V (1968 edition)

SESSION #. 8

Stage III - Planning For and Collection of Data

-Observations

-Standards for - Validity and Reliability

-Methods for making Observations

References

Goldstein, Harris, Chapters IV and V (1963
edition)

Chapters VII and VIII (1968
edition)

Gordon, William. "Research and Social Work
Practice," PAPER Presented at Pittsburg
Veteran's Administration Hospital, 1958.
(See GORDON PAPERS in M.S.S.W. Library)

Additional Readings for the Concept of Validity and
Reliability:

Selltiz, C.; Jahoda, M.; et al. pp.154-186.

Kerlinger, Fred. pp.429-435, pp.444-454. 1st Edi-
tion; 2nd Edition pp.442-446, pp.456-468.

Kogan, Leonard S. "Principles of Measurement,"
SOCIAL WORK RESEARCH Norman A. Polansky
(ed.). The University of Chicago Press.
Chicago. 1960. pp.98-103. Revised Ed.
pp.83-90.

Mosier, Charles. "A Critical Examination of the
Concepts of Face Validity," PRINCIPLES OF
EDUCATION AND PSYCHOLOGICAL MEASUREMENT.
W. Mehrens, R. Bell, (ed.) Rand-McNally &
Co. Chicago, 1967, pp.207-218.

Ebel, Robert L. "Must All Tests Be Valid?" IBID.
pp.219-231.

SESSION # 9 AND # 10

Stage III (continued)

-Classification of Observations

-Qualitative Classifications

-Quantitative Classifications

-Rating Scales

References

- Goldstein, Harris K. Chapters VII, VIII, and IX
(1963 and 1968 Editions).
- Kogan, Leonard S. as above, pp.87-96.
- Selltiz, C; Jahoda, M., et al. pp.186-198.

SESSION # 11

Stage III (continued)

-Sampling

References

- Selltiz, C.; Jahoda, M.; et al. Appendix B.
pp.509-545
- Kerlinger, Fred. Chapter IV
- Goldstein, Harris. Chapter X (1963 edition)
Chapter XIII (1968 edition)
- Yeakel, Margaret and Ganter. "Some Principles
and Methods of Sampling," SOCIAL WORK RE-
SEARCH. Norman A. Polansky, (ed.) Revised
Edition pp.93-108.

SESSION # 12 AND # 13

Stage III (continued)

-Methods of Data Collection

References

- Goldstein, Harris K. Chapters XI, XII, XIII.
- Selltiz, C.; Jahoda, M. et al. Chapters VII and
VIII.
- Kerlinger, Fred. Chapters XXVII, XXVIII, XXIX,
XXX, XXXI.
- Shyne, Ann. "Exploiting Available Data." SOCIAL
WORK RESEARCH Revised pp.109-130.

Jenkins, Shirley. "Collecting Data by Questionnaire and Interview", SOCIAL WORK RESEARCH, Norman A. Polansky, (ed.) revised ed. pp.131-153.

Rosen, Sidney, and Polansky, Norman. "Observation And Social Interaction". IBID. pp.154-181.

SPRING SEMESTER 1977

MEASUREMENT IN SOCIAL WORK RESEARCH - BASIC STATISTICS

SPECIFIC OBJECTIVES

Upon completion of this unit it is expected that the student will have acquired:

-An understanding of selected principles of measurement.

-An ability to apply selected statistics in the organization and presentation of data.

-An ability to decipher and interpret some of the most commonly encountered forms of data display.

SESSION # 1

Introduction, Levels of Measurement, Frequency Distributions and Graphic Presentation
Measures of Central Tendency

- Mean
- Median
- Mode

SESSION # 2

Cumulative Frequency Distribution and Percentiles

SESSION # 3, # 4, AND # 5

The Normal Curve and Measure of Dispersion

- Range
- Average Deviation
- Standard Deviation

Probability

SESSION # 6

Standard Scores

SESSION # 7

Mid-term Statistics Quiz

SESSION # 8

Measures of Correlation

Pearson r (Product-moment correlation)

Spearman's rank-difference correlation co-efficient (Contingency co-efficient)

SESSION # 9

Steps in hypothesis testing

Types I and II Errors.

SESSION # 10 THROUGH TO SESSION # 14

Inferential Statistics

Criteria for selection of Parametric and Non-Parametric Statistical Tests.

Parametric:

Introduction to basic tests appropriate for one or more groups of data, with interval or ratio levels of measurement;

c.g. Difference of Means Test

Student's t

F Test (Simple Analysis of Variance)

Non-Parametric:

Introduction to some of the tests appropriate for one or more groups of data, with nominal or ordinal levels of measurement;

c.g. Chi-square Test

McNemar test of change

Kolmogorov-Smirnov Test

Mann-Whitney U Test

SESSION # 15

Review

SESSION # 16

Statistics Quiz

2. Examples

- (b) Carleton University
School of Social Work
(1976-77)
MSW (52:530)
Prof. E. Moore, Prof. N. Vanier

Research Planning Seminar

Objectives of the Course: (First Semester)

The general objectives of this course are:

- the development of beginning skills in the application of the scientific method of observation and analysis to problems which are relevant to social work practice
- the reinforcement of attitudes which are conducive to critical thinking, to the assessment and integration of developing knowledge and to the evaluation of professional concerns.

More specifically, the lectures and labs aim at helping the student:

- comprehend the problem of knowledge in social work
- understand the nature and procedures of systematic observation of the scientific method
- develop skills in problem formulation, research design, instrument development and data analysis
- use research results in light of their implications for social work practice

This course is geared to students who have had little or no research methodology and statistics at the undergraduate level. It is expected that this course in combination with others in the curriculum will contribute to professional competence in consuming, and potentially participating in, research endeavours.

Organization of the Course:

This one credit course will extend over two semesters - the Fall semester 1976 and the Winter semester 1977, for a total of 27 weeks at 3 hours/week of lectures and labs.

Students are expected to prepare for the lectures and discussions by means of the readings suggested in the bibliography. The labs will be used selectively as they are indicated.

At the beginning of the year students will select a research problem of their choice and follow it through all stages of the research process.

Readings:

Readings are suggested in the bibliography that accompanies the material to be covered each session. As two books will be used extensively, students are urged to purchase them.

- Social Work Research, ed., Norman A. Polansky;
- Loether, Herman J. and Donald G. McTavish.
Descriptive and Inferential Statistics: An Introduction.

Research Planning Seminar:

The first semester, which is geared to helping students formulate a research proposal, will put more emphasis on research methodology or the various phases of the process, whereas the second semester will concentrate on statistics.

The following outline will give the material to be covered in the Fall semester - 13 weeks at 3 hours/week - (Sept. 15. - Dec. 8, 1976)

There will be two hours of lecture/week; the third hour will be reserved for individual consultation on topics chosen by the students.

Social Work Research

- the nature of research in social work
- the nature and sources of professional knowledge
- a historical perspective of social work research
- knowledge as distinguished from value convictions
- ethical commitments in social research

Eaton, Joseph W. "Science, Art, and Uncertainty in Social Work," Social Work, Vol. 3, 3, July 1958.

Gordon, William E. "Knowledge and Value: Their Distinction and Relationship in Clarifying Social Work Practice," Social Work, July, 1965.

MacDonald, Mary, E. "Social Work Research: A Perspective," Social Work Research, (ed.) Norman Polansky, (Chicago: University of Chicago Press, 1960).

Moore, Edith. "Eclectism and Social Work Practice," The Social Worker, Vol. 44, No.1, (Spring 1976) pp.23-28.

*Social Work Research. (ed.) Norman A. Polansky, revised edition (Chicago: The University of Chicago Press, 1975), the Introduction.

Taber, Merlin, and Iris Shapiro. "Social Work and its Knowledge Base: A Content Analysis of the Periodical Literature," Social Work, Vol. X, 4, October 1965.

Specific Contributions of Research to Fields of Practice

Bergin, Allen E. "Some Implications of Psychotherapy Research for Therapeutic Practice," Interpersonal Helping, (ed.) Joel Fisher, (Springfield: Charles C. Thomas, 1973)

Breedlove, James L. "Theory Development as a Task for the Evaluator," Evaluation of Social Intervention, (eds) Edward J. Mullen, James R. Dumpson and Associates, Chapter 4.

Freeman, Edward E. and Clarence C. Sherwood, "The Contribution of Research to Social Policy," Social Research and Social Policy, Chapter 2.

Weiss, Carol H. "Utilization of Evaluation: Toward Comparative Study," Evaluating Action Programs, (ed.). Carol H. Weiss, (Boston: Allyn and Bacon, Inc. 1972)

Problem Identification and Formulation (2)

- problems that are researchable
- socio-political context

- the role of theory in the definition of concepts
- assumptions
- hypothesis and questions
- operational definitions of units of observation

Goldstein, Harris K. D.S.W. Research Standards and Methods for Social Workers, Chapter 3.

Lazarsfeld, Paul F. and Wagner Thielens, Jr. "Comments on the Nature of Classification in Social Research," Continuities in the Language of Social Research, (ed.) Paul Lazarsfeld, Ann K. Pasanella and Morris Rosenberg, (New York: The Free Press, 1972); also "Concepts, Indices, Classification and Typologies," introduction to Section I.

Ripple, Lillian. "Identification and Formulation of a Research Problem" Social Work Research, 1st edition.

Selltiz, et al. "Selection and Formulation of a Research Problem" Research Methods in Social Relations, Chapter 2.

* Social Work Research, (ed.) Norman A. Polansky, revised edition, Chapter I.

Research Design

- exploratory - formulative
- descriptive - diagnostic
- experimental (quasi-experimental)
- the testing of hypotheses

*Finestone, Samuel and Alfred J. Kahn. "The Design of Research," (ed.). Norman A. Polansky, revised edition.

Kahn, Alfred J. "The Design of Research," Social Work Research, 1st edition, Chapter 4.

Selltiz et. al. Research Methods in Social Relations, Chapters 3 and 4.

Stouffer, Samuel A. "Some Observations on Study Design," Handbook of Research and Social Measurement, (ed.) Delbert C. Miller (New York: David MacKay Company, Inc. 1964).

Exemplars of Evaluation Research

- knowledge for what for whom?
- specification of evaluation goals and side effects
- design
- unanticipated results
- utilization and dissemination

Beaudoin, André. "Procedures of Evaluation in Work Activity Projects," Federal-Provincial Conference on Work Activity Projects, (Ottawa: Department of National Health and Welfare), May 1973.

Levine, Abraham S. "Evaluating Program Effectiveness and Efficiency," Welfare in Review, Vol.5, No.2. February 1967.

Levinger, George. "Continuance in Casework and Other Helping Relationships; A Review of Current Research," Social Work, V, July 1960.

Reid, William and Ann W. Shyne. Brief and Extended Casework, (New York: Columbia University Press, 1969).

Vanier, Nicole and Jeanne Fortin. Evaluation Component of the Work Activity Project: A Proposal, July 1973.

*Weber Ruth E. and Norman A. Polansky. "Evaluation," Social Work Research, revised edition.

Weiss, Carol H. "The Politicization of Evaluation Research," Evaluating Action Programs, (ed.). Carol Weiss, (Boston: Allyn and Bacon, 1973).

Universe and Sample

- definition of population
- universe and sample

-types of samples

-sampling procedures

Jahn, Julius A. "Some Principles and Methods of Sampling," Social Work Research, Chapter 4, 1st edition.

Selltiz et. al. "An Introduction to Sampling," Research Methods in Social Relations, Appendix B.

*Yeakel Margaret and Grace Gauter. "Some Principles and Methods of Sampling," Social Work Research, revised edition.

Instruments of Observation (3)

-observation of individual and group characteristics

-interview - schedules

-guides for participant observation

Cannell, Charles F. and Robert L. Kahn. "The Collection of Data by Interviewing," Research Methods in the Behavioural Sciences, Chapter 8.

Cartwright, Dorwin P. "Analysis of Qualitative Material," Research Methods in the Behavioural Sciences, Chapter 13.

*Jenkins Shirley. "Collecting Data by Questionnaire and Interview," Social Work Research (ed.). Norman A. Polansky, revised edition.

Kogan, L.S. "Validity and Reliability and Related Considerations," Use of Judgments as Data in Social Work Research, (New York: N.A.S.W., 1959)

Lofland, John. Analyzing Social Settings, (Belmont, California: Wadsworth Publishing Company, Inc. 1975).

Maas, Henry S. and Norman A. Polansky. "Collecting Original Data," Social Work Research, 1st edition.

*Rosen Sidney and Norman A. Polansky. "Observation of Social Interaction," Social Work Research, revised edition.

Levels of Measurement

-nominal, ordinal, interval, ratio

Forcese and Richer. Stages of Social Research, Chapter 5.

*Kogan Leonard S. "Principles of Measurement," Social Work Research, revised edition.

Smith, H.W. Strategies of Social Research, Chapter 7.

Presentation of Students' Research Proposals (2)

Statistics: (Second Semester)

The second semester focuses on descriptive and inferential statistics and a basic introduction to SPSS computer programmes. Content was based on:

Descriptive and Inferential Statistics: An Introduction, by Herman J. Loether and Donald G. McTavish (Boston: Allyn and Bacon, 1976).

2. Examples

(c) MEMORIAL UNIVERSITY OF
NEWFOUNDLAND
School of Social Work (1977)
S.W. 4420
J. Dempster

Introductory Research Methods in
Social Work

Relationship of Course to Total Curriculum:

This is a compulsory course for all fourth year students in the Bachelor of Social Work programme and is taken in the winter semester concurrently with field placement. For the vast majority of our students this is their first course in research. There is opportunity in this course for integration and cross-referencing of ideas from methods courses: both stress a systematic, planned process of problem solving and the interventive approaches in methods are closely paralleled by the approach to research problems. Since all students are in field placement when this course is taught, there is an opportunity for students to bring "real" practice problems to class for possible research projects.

Course Description:

This beginning level course will focus on the place of research in social work; the logic of empirical enquiry; major behavioural research designs; students will be introduced to the basic knowledge and skills required in the research process: problem formulation, sampling, design of data-gathering instruments, data gathering, data analysis, writing research reports and ethical issues in human research.

Course Objectives:

Cognitive: the student is expected to develop an understanding of the following:

- how to logically analyse knowledge used by the social work profession and be able to understand how that knowledge is obtained.
- the relationship between knowledge and practice and how to selectively apply scientific knowledge in practice settings.
- the methods, procedures and basic tools required in the practice of research.

Affective: students will be expected to be committed to:

- the development of intellectual curiosity and their critical abilities.
- the belief that social work as an applied profession can legitimately engage in the research process and contribute to the discovery of new knowledge.

Skills: students should be able to:

- evaluate, understand and utilize research reports in social work and in the behavioural sciences.
- use basic statistical tools for the gathering and evaluation of data i.e., be able to participate in a beginning way in the research process.

Learning Experiences:

This course will be taught using lectures for the presentation of didactic material, as well as group discussion periods. Laboratory and workshop sessions are planned for the teaching of statistics.

Course Description:

This is a beginning level course which will focus on the place of research in the social work profession; the logic of empirical enquiry; the major research designs in the behavioural sciences; descriptive, survey and experimental; students will be introduced to the basic knowledge and skills required in the research process: problem formulation, sampling procedures, design of data-gathering instruments, data gathering, data analysis, the written research report and ethical issues in human research.

Unit One: INTRODUCTION AND OVERVIEW

This unit will focus on the scope and aims of social research; the relationship between theory and social research; the phases involved in the social research process and the relationship between this process and other problem-solving/interventive processes which students are learning concurrently.

Unit Two: INITIATING SOCIAL RESEARCH

This second unit will focus on the formulation of research problem, ethical issues in research, selecting and operationalizing the appropriate kind of approach:

exploratory, descriptive, hypothesis - generating or hypothesis - testing studies; sampling concepts: probability and non-probability sampling, sample size etc; measurement: sources of measurement error, validity and reliability of measurement, construction and use of measurement scales, measures commonly used in social research.

Unit Three: USE OF STATISTICS IN SOCIAL RESEARCH

In this unit consideration will be given to description of variables: scales of variables, scales and statistics, descriptive statistics and variables, single variable descriptions; the relationship among variables: contingency table, difference between groups, linear relations; students will be introduced to statistical inference: normal curve, sampling distribution, hypothesis testing.

Unit Four: DATA COLLECTION

The fourth unit will consist of an introduction to data collection, observation and documentary-historical methods; the survey: comparing interview and questionnaire survey, procedures for carrying out questionnaire and interview survey; other survey methods and problems involved in surveys; the rationale and design of the experiment will be examined.

Unit Five: PRESENTATION AND USE OF SOCIAL RESEARCH

This last unit will look briefly at the interpretation and reporting of data, and some issues involved in policy contribution of social research.

Teaching Methods:

This course will be taught using lectures for the presentation of didactic material; as well, group discussion, laboratory and workshop sessions are planned.

CAMPBELL, DONALD T. and STANLEY, JULINA C. Experimental Designs for Research. Chicago: Rand McNally and Co., 1963.

FELLIN, PHILIP, TONY TRIPODI and HENRY J. MEYER. Examples of Social Research. F.E. Peacock Publishers Inc., Itasca, Ill., 1969.

- FORCESE, DENNIS and STEPHEN RICHER, Social Research Methods. Toronto, Prentice-Hall, 1973.
- GLASS, GENE V. and JULIAN C. STANLEY. Statistical Methods in Education and Psychology. Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1970.
- HABENSTEIN, ROBERT W. (ed.). Pathways to Data. Aldine Publishing Company, Chicago, 1970.
- N.A.S.W. Social Science Theory and Social Work Research. ed. by Leonard S. Kogan. N.A.S.W., 1960.
- POLANSKY, NORMAN A. (ed.). Social Work Research. The University of Chicago Press, Chicago and London, 1960.
- SELLTIZ, CLAIRE et al. Research Methods in Social Relations. Toronto: Holt, Rinehart and Winston (Revised edition, 1969)
- TRIPODI, TONY, FELLIN, PHILLIP and HENRY J. MEYER. The Assessment of Social Research. F.E. Peacock Publishers, Inc. Itasca, Ill., 1969.
- YOUNG, PAULINE V. Scientific Social Surveys and Research. Prentice-Hall Inc., Englewood Cliffs, New Jersey (revised edition, 1968).

C. Understanding and Utilization of Research

1. The Category

One approach in teaching introductory courses in social work research is that of focusing on understanding the research literature and utilizing social work research as a complement to practice and professional development.

2. Examples

- (a) University of Calgary
Faculty of Social Welfare (1977)
SOWK 411, Sect. 03
Joanne O'Connell

The Utilization of Social Research

SOWK 441 is a research course designed for social work students. It is based on the assumption that most of the students will likely not enter research practice in their careers, but do need assistance in learning to make continuing use of the literature as a means to their own professional development.

SOWK 341 is a prerequisite to SOWK 441. It is assumed that students will have absorbed, through SOWK 341, a sense of the basic vocabulary and logic of scientific activity. SOWK 441 will take this basic knowledge and use it to examine a series of articles specific to the social work area, with the intent of teaching methods of analysis to be applied to any similar material.

Those students who are interested in extending their knowledge of research in an applied direction should consider registering in other research courses after they have completed SOWK 441. SOWK 541, and external courses in statistics or research design, are recommended, particularly for students who have long-range plans to enter graduate school.

COURSE OBJECTIVES

As an overall objective, the course aims to assist students in developing the ability to understand and critically evaluate a published research report. Specifically, when looking at an article, students should be able to:

- Identify the major purposes in writing the article.
- Specify the extent and boundaries of the conceptual framework selected by the author.
- Identify and evaluate the operationalization of major concepts.
- Identify and evaluate the major design elements of the research (sampling, comparisons).
- Identify the common statistical symbols, and understand the functions which they represent.
- Evaluate the soundness of conclusions and recommendations made by the author.

As a minor objective, the course aims to provide some instruction in library search and retrieval of research materials.

COURSE DESCRIPTION

After the first two to three weeks of introduction, the course will fall into a pattern of two types of activity: one on Tuesdays, one on Thursdays. Tuesdays will be used for instructor - presentation of material (review of basic research vocabulary, and consideration of simple descriptive statistics). Thursdays will be given to discussion of research articles. Students will be required to prepare a presentation (instructions will be given on a separate handout) on a specific research article. Each student will prepare one presentation on one article. After the presentation, students will submit their material in written format for grading.

The Tuesday classes should not require advance preparation outside classtime. All students should expect to read, prior to the Thursday class, the article which is scheduled for discussion during that week.

During the second week of classes, the class will take a conducted tour of the social science areas of the library.

Students are advised to read through one of the introductory textbooks (Labovitz, Blalock) early in January.

TEXTBOOKS AND REQUIRED READINGS

There is no assigned text as such for the course. The articles for class discussions will be copied and sold to students as a packet. Total price should be approximately \$3.00 depending on the number of students.

SCHEDULE OF CLASSES

	<u>TUES.</u>	<u>THURS.</u>
Week 1		Intro.
Week 2	Overview: Research cycle	Library Tour: Information Centre, 9:30 a.m.
Week 3	Concepts, variables and definitions	Measurement
Week 4	Measurement	Article: Kaim-Caudle and Marsh
Week 5	Sampling	Article: Pokorny and Bentinck
Week 6	Design and Causality	Article: Van der Veen
Week 7	Design and Causality	Article: Kennedy
Week 8	READING WEEK - NO CLASSES	
Week 9	Summary sta- tistics	Article: Webb and Riley
Week 10	Statistics of relation	Article: Lebedun
Week 11	Reading Tables	Article: Wells, Dilkes & Trivelli
Week 12	Reading Tables	Article: Foot and Russell-Lacy
Week 13	Exam	Article: Fontana and Grant
Week 14	NO CLASS	Final critique due Krau

Week 15

NO CLASS

LIST OF ARTICLES

Kaim-Caudle, P.R. and Marsh, G.N. Patient-satisfaction Survey in General Practice. British Medical Journal 1975, 1, 262-264.

Pokorny, Alex D. and Bentinck, Catherine. A Study of Relatives' Views of State Mental Hospital Patients. Social Casework, November 1969, 519-526.

Van der Veen, Ferdinand. The Parent's Concept of the Family Unit and Child Adjustment. Journal of Counselling Psychology, Vol. 12, No. 2, 1965, pp. 196-200.

Kennedy, James F. Maternal Reactions to the Birth of a Defective Baby. Social Casework, July 1970, pp. 410-416.

Webb, Allen P. and Riley, Patrick V. Effectiveness of Casework with Young Female Probationers. Social Casework, November 1970, pp. 566-572.

Lebedun, Morty. Measuring Movement in Group Marital Counseling. Social Casework, January 1970, pp.35-43.

Wells, R.A., Dilkes, T.C. and Trivelli, N. The Results of Family Therapy: A Critical Review of the Literature. Family Process.

Foot, Hugh C. and Russell-Lacy, Steven P. The Imposition of Values in Social Casework. Social Casework, November, 1973, pp. 511-518.

Fontana, Leonard and Grant, Morris L. An Evaluation of Project STAR. Social Casework, May, 1974, pp. 293-298.

Krause, Kenneth. Authoritarianism, Dogmatism and Coercion in Child Caring Institutions. A Study of Staff Attitudes. Child Welfare, Vol. LIII, No. 1, January 1/74, pp. 23-30.

BIBLIOGRAPHY: RECOMMENDED READINGS

1. Introductory books which present an overview of the usual techniques and vocabulary of research.

Blalock, Jr., H.M. An Introduction to Social Research, Prentice-Hall, 1970.

Labovitz, Sanford and Hagedorn, Robert. Introduction to Social Research, McGraw-Hill, U.S.A., 1971 (also, rev. 1976)

2. Introductory books which present a view of science as an activity directed towards creating one kind of knowledge.

Agnew, Neil McK. and Pyke, Sandra W. The Science Game: An Introduction to research in the behavioural sciences, Prentice-Hall Inc.: Englewood Cliffs, New Jersey, 1969.

McCain, Garvin and Segal, Edwin M. The Game of Science (Second Edition), Brooks/Cole: Monterey, California, 1973.

3. On assessment, evaluation and utilization of research.

Tony Tripodi, Phillip Fellini, and Henry J. Meyer. The Assessment of Social Research, F.E. Peacock: Itasca, Ill., 1969.

4. On interpretation of statistical data.

Stephen K. Campbell. Flaws and Fallacies in Statistical Thinking. Prentice-Hall, Inc.: Englewood Cliffs, N.J., 1974.

Darrell Huff. How to Lie with Statistics. Norton: New York, 1954.

John L. Phillips, Jr. Statistical Thinking: a Structural Approach. Freeman: San Francisco, 1973.

5. On concepts, variable and operationalization

Marie Jahoda. Current Concepts of Positive Mental Health. Basic Books: New York, 1958.

(b) McMaster University
School of Social Work (1977)
Social Work 3K3
Cyril Greenland

The Utilization of Social Research

"Examination of the conceptual framework of scientific inquiry relating to social work research and practice. Survey of selected research from other disciplines relevant to social work."

Objectives

The primary objective of this seminar will be to increase the ability of participants to understand research proposals, to analyse reports and determine the validity of research findings. The focus will be much more on the needs of students as consumers than the research practitioner. Accordingly the students will be required to examine a variety of research reports and present their findings to the seminar.

Evaluation

For evaluation purposes all students will be required to complete a research grant application. (Canada Council Humanities and Social Sciences Division). The research topic must be negotiated in advance with the instructor. The deadline for the completion of this assignment is April 15th, 1977.

Program

As a background to the seminar the instructor will present his views on (i) the scientific basis for social work practice, (ii) the traditions of social work research and (iii) ethical issues in research design and practices.

It is also planned to invite other researchers to report on their work in progress.

Readings

Agnew, N.M., and Pyke, S., The Science Game, (Prentice Hall, 1969).

Polansky, N.A., Social Work Research (The University of Chicago Press, 1972), (the revised edition).

Weiss, C., Evaluation Research, (Prentice Hall, 1972).

D. A Combined Approach

1. The Category

One course outline stood out in its complexity and addressed with seemingly equal focus methodology, statistics, and understanding and utilization.

2. Example

- (a) School of Social Work *
McGill University

Course Objectives

- Read published research studies, understand the pros and cons of the methodology involved, and make some judgement as to whether the researcher's conclusions can be trusted.
- Understand and use agency statistics.
- Conduct simple, agency-based research projects, or assist agency researchers or outside consultants in conducting larger scale studies.
- Write simple research reports in acceptable style.

Module 1 Introduction and Research Games

OBJECTIVES OF THIS MODULE

- To provide a brief introduction to the special problems of research in the social work profession.
- To provide descriptions and instructions for the research games.

* This partial outline is edited from a one semester course in which a modular programme replaces lectures and in which research game simulations replace lectures in the classroom. The series of ten modules, entitled Social Work Research: An Introduction, by J. Aronson, S. Duder, S. Neysmith, E.V. Shiner, and P. Cavill, is available from McGill University. For a discussion of the research games, see J. Aronson et al., "Teaching Social Work Research with Simulation Games", in Canadian Journal of Social Work Education, 3,3 (1977): 5-16.

RESEARCH GAMES

- Game 1 - Community Needs
- Game 2 - Welfare Recipient Survey
- Game 3 - Hospital Discharge
- Game 4 - Marriage Counselling
- Game 5 - Labelling

Module 2 Problem Formulation

OBJECTIVES OF THIS MODULE

- Identify problems for study.
- Present problem questions and research hypotheses, taking into account their value dimension.
- Be familiar with the terms, concepts, constructs, variables and operational definitions and know their function in the problem formulation phase of research.
- Be able to prepare a problem formulation statement yourself.

OUTLINE

- The Problem Statement
- Review Of The Literature
- Hypothesis
- Values And Assumptions
- Variables: Independent, Dependent, And Intervening
- Concepts, Constructs, And Operational Definitions

Module 3 Research Design

OBJECTIVES OF THIS MODULE

- Categorize existing studies according to their research design and be able to support your decision.
- Identify flaws or inefficiencies in the design

of existing studies.

- Say to what extent the results of a study might apply generally, to other settings.
- Recommend a suitable design for the conduct of a study.

OUTLINE

- Classifying Research Design
 - A Compromise Classification Scheme
 - exploratory research
 - quantitative-descriptive research
 - matching designs
 - quasi-experimental research
 - experimental research
 - Basic Principles Of Research Design
 - internal validity
 - control groups
 - random assignment
 - matching subjects
 - controlling the Hawthorne effect
 - controlling for learning effect and testing
 - controlling for instrumentation or instrument decay
 - controlling bias derived from natural processes
 - external validity
 - sample representativeness
 - variable representativeness

Module 4 Analyzing Research

OBJECTIVES OF THE MODULE

- What it is about
- The clarity of its presentation
- Whether it is believable
- Its usefulness

OUTLINE

- Analysis Of An Exploratory Study

- questions to ask
- the exploratory study
- responses to the questions
- Analysis Of A Quantitative-Descriptive Study
- Analysis Of A Quasi-Experiment And An Experiment

Module 5 Measurement

OBJECTIVES OF THIS MODULE

- Say whether each variable is categorical (nominal scale) or continuous (ordinal, interval or ratio scale).
- Point out what the researchers have done to make sure that their measurements are reliable, and suggest what more they might have done.
- Discuss how valid the measurements are, and why you think this is so.

OUTLINE

- What Is Meant By "Measurement"
- Variables And Scales
 - types of variables
 - nominal scales
 - ordinal scales
 - interval and ratio scales
- Reliability Of Measurement
 - sources of variation in measurement
 - inter-rater reliability
 - test-retest reliability
 - split-half reliability
- Validity Of Measurements
 - face validity
 - criterion-related validity
 - construct validity

Module 6 Data Collection: Questionnaires and Interviews

GOALS OF THE MODULE

- For the student to read a piece of research where

the data were collected via a mailed questionnaire and be able to assess the results in terms of factors which might affect the quality of an answer and/or bias the returns.

- For the student to demonstrate his knowledge of different types of interview questions by giving examples. He/she should be able to discuss the pros and cons of using an interview schedule versus an interview guide and closed versus open-ended questions.

OUTLINE

- Questionnaires
 - closed versus open questions
 - use of a pilot study
 - problems encountered in designing questions
 - ensuring internal and external validity
 - final preparation of the instrument
- Interviews
 - schedules vs. guides
 - training interviewers
 - barriers to reaching the interviewee
 - interviewer contamination

Module 7 Data Collection: Other Approaches

PURPOSE OF THIS MODULE

- For the student to be capable of reading a piece of research and recognizing the method used for collecting the data.
- He/she should be capable of suggesting an alternative means of collecting the required data and substantiate why his suggestion would be as good as or superior to that used by the investigator.
- The student should be capable of suggesting a design to a designated problem involving two or three modes of data collection. Again, he/she should be able to substantiate what different types of information he hopes to obtain by using a multi-collection approach.

OUTLINE

- Tests And Scales

- the semantic differential
- Q methodology
- projective tests
- sociometry
- Observation
 - the participants vs. the non-participant observer
 - structured observations
- Available Data -- Secondary Sources
 - as background information
 - for their efficiency
 - as the method of choice
 - for historical research
 - the problems involved
- Content Analysis

Module 8 Analysis and Interpretation

ASSUMPTIONS AND OBJECTIVES

This module is obviously not intended to be in any sense a statistics text. It reviews some of the more common statistical procedures, indicates where you might want to use each one, and gives textbook references so that you can look them up when you need them. It includes the simple statistics that are normally covered in an introductory course, and also some of the more complex multivariate procedures that are especially useful in social work research. Though the latter are really beyond the level of an introductory research course, they are too important to ignore, and they are included here to give you an idea of how they fit in to the general picture.

When you have completed this module and the related assignments, you should be able to do the following:

Given a research hypothesis and some simple raw data:

- Suggest appropriate ways of summarizing the data, such as graph or descriptive statistics.
- Suggest appropriate tests to determine whether the relationships observed in the sample data are statistically significant.
- Look at the research question in the light of this evidence, say whether the findings support the

hypothesis or not, and give reasons for your conclusion.

Given a published research study:

- Detect obvious weaknesses in the presentation of data and the statistical procedures used (tables, graphs, descriptive statistics and tests of statistical significance).
- Distinguish between findings and inferences drawn from findings.
- Say whether the researcher is entitled to draw the inferences he does from his findings, and if not, why not.

OUTLINE

- Analysis - Kinds Of Statistics
 - descriptive statistics
 - inferential statistics
- Analysis - Choosing A Statistical Procedure
 - nominal variables
 - ordinal variables
 - interval and ratio variables
 - multivariate procedures
- Interpretation
 - relating findings to research questions
 - validity
 - practical significance
 - causal inferences
 - unexpected findings

Module 9 Use Of The Computer

OBJECTIVES OF THIS MODULE

This module presents, in this introductory section, a general description of the McGill computer facilities and how they may be used, and some general rules for handling and coding data. The rest of the module consists of annotated examples of small computer runs, showing how to handle data from Games 3 and 4, and how to read the resulting computer printouts.

After you have completed this module you should be able to:

- Use the computer terminal for simple conversa-

tional programs.

- Recognize a situation where it might be appropriate to analyze your research data by computer.
- Use a computer terminal to execute subprograms from the SPSS Primer.
- Feel reasonably comfortable about the computer and what it can do for researchers.

OUTLINE

- Introduction
 - research quizzes
 - data analysis - SPSS
 - data preparation and coding
- Crosstabs And Chi Square
 - when to use
 - data
 - control cards
 - editing
 - running the program
 - reading the printout
- T-Tests
- Analysis Of Variance

Module 10 Reporting Research

OBJECTIVES OF THIS MODULE

As a social work student, and later as a graduate social worker, you will often need to make written reports of your findings and professional activities. If you are in the MSW program, you will be expected to write a major research report, which will be judged according to stringent standards by two independent readers. It will help if you know how to present factual material in as clear, complete and readable a way as possible, and in accordance with professional reporting practices. In this module, we try to give you the information you will need to do this. We are obviously not, at this stage, trying to teach you how to write good English - this we assume you already know. The aim is rather to show you what kind of material to include in your research report, and how to present it.

OUTLINE

- Statement Of The Problem
 - question and setting
 - theory and related research
 - values and assumptions
 - hypotheses
- Methodology
 - research design
 - data collection
 - analysis
- Findings And Discussion

III ASSIGNMENTS

A. Non-Statistical Examples

1. Research Design and Analysis Focus

- (a) The University of British Columbia (1976-77)
School of Social Work
CBSW 420
Dr. John Crane

Term Paper Assignment

Write a critical analysis of the problem formulation, basic design, and plans of data collection, sampling and data analysis of the class project in the section of S.W. 420 of which you are a member. Include in your analysis suggestions about how any weak points which you identify might be strengthened.

References

The text for the course, Research Methods in Social Relations by Selltíz et al.

The Assessment of Social Research by Tony Tripodi
HVII, T74, 1969. Chapter 3 of this book provides a framework for the evaluation of research, which may be used as a guide in writing your critical analysis.

A Guide to the Class Research Project

Introduction

This outline is arranged according to the main stages of the research project. The time and effort devoted to each stage will vary with different topics. The outline will be useful in focussing class activities at each stage and working out a timetable. Not all of the procedures outlined will apply to every research project, but all will be considered. The outline will also be used to divide the class into a series of task forces to work on different aspects of the research.

Procedures in Searching and Reviewing the Literature

-The instructors assigned to each class section will prepare a 'starter' list of reading materials central to the research area. This will be

supplemented by additional readings as the course proceeds.

-For additional library search, the following are the most frequently used encyclopaedias, indexes and abstracts:

- Social Work Yearbook
- Encyclopaedia of Social Work
- Encyclopaedia of the Social Sciences
- Abstracts of Social Work Doctoral
Dissertations (In Social Service
Review, September of each year)
- Sociological Abstracts
- Social Work Abstracts
- Dissertation Abstracts
- Psychological Abstracts
- Index Medicus
- Education Abstracts
- Education Index

Main Tasks in Conducting an Experience Survey

-An experience survey may be undertaken as part of the initial exploration of a research problem. Such a survey is useful when there is, around a given problem, a substantial reservoir of practice experience which has not been adequately formulated.

-As a rule, an experience survey is best undertaken following the student's preliminary search and review of whatever literature is available. This will help the student to formulate useful questions to put to respondents in the experience survey.

-When an experience survey is decided upon, the students and instructor should compile a list of individuals who can be expected to have special knowledge of the problem to be investigated.

-A checklist of questions should be developed designed to elicit the respondent's perceptions of the problem, particularly such features as:

- the scope and importance of the problem
- current practices in dealing with the problem
- the main decisions needing to be made with

respect to the problem

-data needed to make the decisions

-availability of data and of study populations

-The respondents should be furnished with a brief description of the problem selected for research, and a list in advance of the interview of the checklist of questions.

-Together with the abstracts of readings, the data obtained in experience survey should be used as the raw materials from which to develop a problem formulation.

Problem Formulation

-The main tasks to consider in problem formulation are:

-formulating the purposes which guide the enquiry

-formulating the questions to be asked or hypothesis to be tested

-choosing an appropriate model design: e.g. exploratory, descriptive or experimental

-outline of the conceptual framework of the study, specifying the variables to be included

-deciding upon the general way in which variables will be given operational specification (a more detailed plan to be worked out at a later stage)

-distinguishing, if necessary, between dependent and independent variables

-identifying the persons concerned with the research problem (e.g. policy makers, practitioners of social work methods, client groups, researchers in social work, others)

-specifying now the objectives of at least some of these persons will be furthered by the research.

Sampling Design

-The main tasks to consider in developing the sampling design are:

- identifying the study populations needed and available
- estimating the needed sample size, in the light of the study goals and questions, the level of accuracy required in the findings, and available information, if any, about population parameters
- obtaining an inventory of the study population
- reviewing the alternative sampling methods applicable to the problem
- in larger scale surveys, obtaining consultation from a sampling specialist
- selecting the sampling method which appears optimum for the study
- where desirable and feasible, drawing a test sample, to determine the accuracy of the population inventory
- in larger scale surveys, estimating needed sample size from pretest or pilot study data
- developing a plan for dealing with the problem of non returns or unavailables

Data Collection Design

-The main tasks to consider in developing the data collection design are as follows:

- reviewing the statement of variables to be included in the study, as set forth in the problem formulation
- taking inventory of data collection instruments developed by other researchers which might be useful. The principal sources for the inventory will be the materials collected in abstracting the literature

- listing alternative methods of data collection applicable to the research problem
- making judgments as to the feasibility of each method, the reliability and validity of the data to be secured by each, and the time and expense involved in each method. This may require additional consultation with the organization in which or for which the study is to be conducted
- on the basis of the above four steps, developing operational definitions of each of the study variables
- drafting schedules and questionnaires incorporating the study variables, as defined operationally
- developing a plan of analysis of pretest data
- developing criteria for the retention, elimination, or revision of questionnaire or schedule items.
- choosing and drawing pretest samples
- administering instruments (questionnaires and schedules) to pretest samples
- tabulating pretest data
- analyzing pretest data
- revising or eliminating questionnaire and schedule items
- putting questionnaires and schedules in final form or conducting additional pretests

Data Analysis Design

- The following are the main steps to consider in developing the data analysis design:
 - reviewing study questions or hypothesis
 - selecting the variables to be analyzed for each question or hypothesis

- choosing the statistical measures and tests to be employed
- writing dummy tables
- making a judgment as to whether the proposed analyses adequately answer the study questions or test the study hypotheses
- as necessary, revising the list of variables included in the study and developing operational specification for any additional variables required
- writing the plan of analysis in final form
- precoding the data as necessary
- where a computer is to be used, arranging for consultation with a computer programmer
- choosing a computer programme (Ordinarily this will be from a list of standard programmes)
- writing the first draft of programming instructions

Data Collection

-The main steps in data collection are:

- drawing the study sample
- recruiting and training interviewers, coders, observers, raters, or judges (in some cases, all of these roles are taken on by the student doing the project!)
- assigning cases to interviewers, coders, etc.
- administering instruments (questionnaires, schedules, etc) to the main study sample
- drawing alternative samples as needed to substitute for non returns or unavailables in the main study sample
- administering the study instruments to alternative samples

Data Analysis

- The main steps in data analysis are:
 - tabulating the data or coding it for card punching
 - obtaining card punching services
 - putting programming instructions in final form
 - arranging for a test computer run for 'debugging' purposes, and carrying out final computer runs

Research Report Writing

- The following are the main tasks in research report writing:
 - developing an outline of the research report (the outline given in section XI may be used as a guide)
 - writing the draft sections of the report. The account of the problem formulation and research design may be taken from material prepared earlier (see sections IV-VII above) though the order of presentation of topics may vary
 - editing the material to ensure that it is in standard form for a research report

A suggested Outline for the Research Paper

Chapter I Introduction

The Problem Creating for Research

- Summary statement of the problem. Purposes which guide the enquiry (may be taken from IV,1).
- Persons or groups concerned with the problem (may be taken from IV,1):
 - policy makers
 - administrators
 - practitioner of client service methods

client groups
researchers
the public at large

Brief explanation of the objectives of each of these participant groups as they are affected by the problem

Organization of the Research Report

-Brief statement of the plan of organization of the research report.

Chapter 2 Review of the Literature (may be incorporated in Chapter 1).

-An outline for this Chapter should be constructed, based upon the abstract outline or checklist of questions developed earlier.

Chapter 3 Study Design (to be adapted from sections IV-VII)

The Theoretical Framework

-Outline the conceptual framework employed in the study.

Hypotheses and Assumptions of the Study

-State the hypotheses or main questions of the study.

-Where applicable, operationally define the dependent and independent variables of the study.

-State any particularly important value assumptions as well as assumptions of fact underlying the study.

Level of Research Design

-Identify the model research design chosen for the study (e.g. sample survey or field experiment) explaining the basis for selection.

-Describe how control of interfering variables was achieved, if at all.

-Specify the plan of data analysis and the criteria used for drawing conclusions from the data (e.g.

statistical level of significance, comparison with other findings of norm data, etc.)

Sampling Procedures

-Describe experimental and/or control samples:

specify the population from which the samples were chosen

explain how sample size was determined

explain the method of choosing the sample

Methods of Gathering Data

-Describe the sources of data used (e.g. agency records, interviews)

-Describe the standardized tests used, if any, including their sources and the degree of validation achieved in previous research.

-Outline the schedules and questionnaire developed for the present research. Copies in study appendix.

-Describe the preliminary testing of instruments and the results of this.

-Outline procedures and results of pilot study, if any.

Chapter 4 Study Findings

-Problems in Sampling, Data Collection and/or analysis. Modifications in study design.

-Descriptive data on study sample: who was studied?

-Findings on Study Questions and/or Hypotheses

Chapter 5 Summary, Conclusions and Recommendations

-Summary of Study.

-Implications of the findings for the various groups concerned with the problem: proposals for using the findings.

-Proposals for further Research.

(b) University of Regina
Faculty of Social Work

Research Assessment

The following fictitious research report has been written for your assessment. It contains a certain number of mistakes. Your task is to identify these mistakes.

It is suggested that you read the report in its entirety marking suspected errors. Write on the right-hand side of the page the following: (1) identify the errors and (2) explain briefly why this is an error according to what you know about research.

A STUDY OF THE EFFECTIVENESS OF CLINICAL
INTERVENTION WITH SCHIZOPHRENICS

Introduction

An overview of the vast literature concerned with the etiology of schizophrenia indicates a considerable difference of opinion. Further study of the modalities of intervention with these people indicates a corresponding variance in techniques ranging between various somatic approaches through to psychotherapy or combinations of these types. Little research is available employing a comparative design wherein different methods are used concurrently with samples from the same patient population.

The study reported here is intended to compare the effectiveness of three types of intervention with schizophrenic patients in a local mental health facility. The procedure employed in this research could best be classified as an exploratory design because of the lack of information in this area.

Three distinct methods of intervention were employed in this study reflecting three theoretical views of the schizophrenic. These are outlined as follows.

The schizophrenic patient, because of his poor experience in relation to expressing his feelings and because of his rather tenuous contact with reality, frequently finds himself unable to ex-

press certain feelings unless the therapist gives him permission within a positive therapeutic relationship. In situations in which the schizophrenic patient should be angry and enraged it is frequently seen that the patient responds to his own narration of the material without appropriate affect. In other words, the recall is there but the affect must be repressed. In order to bring about change in the patient's means of relating to his environment it is essential that the therapist spend much time exploring with him, his past history and unearth the repressed conflicts which have led to this psychological reaction. The only means available to a clinician to accomplish this task is a program of individual psychotherapy with the patient.

Others will argue that schizophrenia is a physiologically determined illness and as such should be subject to some method of reorganizing the neuron connections in the brain. The method most frequently employed to reach this objective is electroconvulsive therapy (E.C.T.).

Another school of thought suggests that the behaviour for a schizophrenic is inappropriate, learned behaviour and thus treatment must centre on the restructuring of the patient's behaviour and the reinforcers which accompany the behaviour. No attempt is made to deal with the individual's repressed feelings. This rather mechanistic approach to human problem solving has some support in the literature and is commonly referred to as behaviour modification.

Hypothesis Formulation

Of these three alternatives to therapy, the first method (psychotherapy) most certainly has the stronger theoretical support and would thus lead one to predict that patients undergoing psychotherapy would show greater improvement than patients exposed to each of the other methods. On the basis of this theoretical discussion the hypothesis to be tested here can be stated as:

Schizophrenics exposed to a
programme of psychotherapy

will show the greatest improvement for those exposed to behaviour modification, followed by the least improvement for those exposed to E.C.T.

Procedure

The patients on one ward of a large multi-functional hospital comprised the universe for this study. The patients on this ward had all been diagnosed as schizophrenic at the time of their admission to the hospital. There exists some variation in length of stay on this ward. Two patients have been on the ward for a period in excess of 4 years, some three years, most approximately 1½ years. Five patients have been on the ward less than six months.

Three professional staff were involved in carrying out the therapy programs. Each therapist was given training in the theory and techniques associated with the method he was to use. This training was carried out by the researcher.

Patients were randomly assigned to their treatment groups by first alphabetically listing their names on a research sheet. The first case was assigned to the psychotherapy group, the second to the behaviour modification group and the third to the E.C.T group. The assignment of patients was continued on this basis until the total number of patients was assigned to one of the three groups (N=30).

Each patient was seen individually twice a week by his therapist. After the therapy he was allowed to return to the ward program (save for the E.C.T. patients who were usually too dizzy to return until the next day).

Each therapist was allowed to carry on his/her program on his/her own with the understanding that they would direct their therapeutic behaviour on the basis of the model they had been taught.

To avoid unnecessarily complex data collection

one outcome measure of success was utilized. This was the number of days spent on the ward between the onset of the treatment program and discharge from the ward. As each therapist had spent the most time with his patients it can be assumed that he knew their progress the best. It was on his professional judgement that the patient was discharged.

Findings and Conclusions

The results of this study are summarized in Table 1 below.

Table 1

	X(days on ward)	Std. Deviation
Psychotherapy	113.2	16.743
E.C.T.	110.2	6.966
Beh. Mod	76.6	5.755

In order to test the significance of the differences achieved between these treatment methods Kendall's tau was calculated.

In this study $\tau = -.20$. Understanding that the statistic τ has a value of -1 when the paired ranks are in an inverse order we must conclude that the differences experienced in this study are not of a significant nature and that any differences resultant must be attributed to what could have in fact resulted in chance factors alone.

Discussion

Although the differences between groups does not statistically test to be significant a few comments of an observational nature should be made. The patients who were treated on a behaviour modification model, on the average, spent less time on the ward before discharge. It was noted, however, by the other therapists that these patients were not as equipped to understand their problem as were the patients who were discharged from the psychotherapy group.

They further observed that these patients were not as spontaneous as those from the psychotherapy group.

One can conclude that although behaviour modification patients were discharged earlier chances are that they will not function as adequately outside the hospital as those treated by means of psychotherapy.

There is ample data from this study to suggest that replication using a larger sample, would produce more significant findings, particularly where psychotherapy is concerned.

1. (c) McGill University
School of Social Work,
407-270
Dr. S. Neysmith

Analytical Assignment

Choose one of the five research studies listed below and analyze it according to the outlines given in Module 4. Choose whichever approach is appropriate for that particular study. Your analysis should answer all the questions listed in the module and should be approximately the length of the sample analyses given in the modules (between 5 and 9 double-spaced typewritten pages).

If none of the following articles fall within your particular area of interest, you may select an alternative study from the literature. Please make sure, however, that it is of journal length and reports the results of a research undertaking which is relevant to social work. Before starting on the analyses I would suggest you show it to me in order to be sure that it meets the above criteria.

This is not a team assignment - each student must do an individual paper. Your grade for this assignment will be based on the correctness of your answers to factual questions about the study, on the appropriateness of your critical comments and on the clarity of your presentation. This assignment will count for 20% of your course grade.

MODULE*QUESTIONS: (SELECTED)

General questions to ask

- What aspect of social work does the research deal with? (Client characteristics, treatment, outcomes, etc.)
- Has the author shown how he used his experience and the related literature in formulating the problem? Are the Problem and Research purpose logically and clearly related to the theory and knowledge discussed?
- How are the findings presented? (tables, graphs,

* Social Work Research: An Introduction (Module 4: Analyzing Research), Jane Aronson and Sydney Duder, McGill University, School of Social Work, 1976, pp. 10-11, 23-24.

- descriptively etc.) Is the presentation clear?
- Does the researcher make justifiable interpretations of his findings? Are they related back to the original research question and the literature? Is an adequate distinction made between facts and interpretation?
 - Is the report written clearly and understandably?
 - Are the results useful for further research or for practice? How?

Analysis of a Quasi-Experiment and an Experiment: Questions to ask

- What is the major purpose of the research?
- What is the hypothesis being tested? Is it implicit or explicit?
- What does the author identify as the independent and dependent variables? Are any intervening variables mentioned? Do you think there are any that may explain the relationship between the independent and dependent variables?
- Are these variables defined operationally? Do you think that the definitions are adequate?
- What extraneous variables are identified? Does the author make explicit assumptions about any?
- How are the independent variable(s) and the extraneous variables controlled or manipulated? How are subjects chosen and assigned to different treatment groups (randomly, by matching etc.)? Is there an untreated or differently treated control group?
- Is this design an appropriate choice for answering the research question? Have adequate steps been taken to control variation from sources other than the study variables, i.e., does the design have internal validity? How generalizable are the findings to other settings, i.e., what degree of external validity does the design have?
- What techniques of data collection are used (questionnaire, interview, Q methodology etc.)? What kind of data are collected? Does the author demonstrate that the measuring instrument is valid and reliable?
- What analytical techniques are used, and are they appropriate for the type of data (nominal, ordinal, interval, ratio)? Which tests of statistical significance are used? Were they the most appropriate to test the hypothesis?
- Does the researcher state that the findings supports his hypothesis? Do you agree?

Thomas Carlton and Marshall Jung. "Adjustment or Change: Attitudes Among Social Workers", Social Work, November, 1972.

Joel Fischer et al. "Are Social Workers Sexist?" Social Work, (vol. 21, no. 6), November, 1976.

Edward A. Powers and Gordon L. Bultena. "Correspondence between Anticipated and Actual Uses of Public Services by the Aged", Social Service Review, Vol. 48, No. 2, June, 1974, pp. 245-254.

William J. Reid. "A Test of a Task-Centred Approach", Social Work, Vol. 20, No. 1, January, 1975.

Richard C. Tessler and Norman A. Polansky. "Perceived Similarity: A Paradox in Interviewing", Social Work, Vol. 20, No. 5, September, 1975.

2. Research Concepts Focus

- (a) University of Windsor,
Social Work 446C
F.C. Hansen

Assignment

Written assignments will account for 50% of the course mark. In order to provide flexibility there will be two options to meet the requirements. The two options have the same purpose, i.e., to provide evidence of your knowledge of the research process, especially the stages of, a) Problem Identification and Formulation, b) Research Methodology including design logic, sampling, classification, and, c) Data Collection and Analysis.

Option #1

Choose a bench mark or Major Social Work research project and prepare a critique of the project. Your critique should place major emphasis on the problem formulation, research design phases, but should also contain your analysis and evaluation of the project and indicate your thoughts on its utility for social work. Begin your paper with a brief summary of the project. Maximum length is to be 20 pages.

Date Due: April 7, 1977

The choice of project must be approved by the instructor.

Option #2

Prepare a report on a mini-project which provides evidence of your knowledge of the research process. The mini-project may be done in conjunction with another course provided such is approved by the instructor of that course. It may be done in groups of two students. Larger groups must be approved as must the topic chosen.

Date Due: April 7, 1977

(b) : University of Toronto
SWK 5301 F
Mr. W. Hayden

Assignment

The following statement may or may not be a complete problem identification and formulation. You must decide rather if it is a problem identification and/or formulation.

If you decide that it is complete as a problem identification and formulation statement then you must develop a descriptive defense that states in specific terms the basis of your decision.

If you decide that it is not complete you have two alternatives: (1) You must defend your choice based on a specific description of why the statement is inadequate; or (2) Using the notions presented in the statement develop a clearly defined problem area.

Your defense should come from only Goldstein, pp. 1-65; the assigned readings thus far in this course. For a further clarification of Goldstein you may consult Lillian Ripple. "Problem Identification and Formulation". Social Work Research (University of Chicago Press: Chicago, 1960), Norman A. Polawsky, ed., pp. 24-47.

Professionalization in Social Work Education

What are the theoretical assumptions of professionalization found within social work education? These assumptions should be identified in the literature, professional organization and curriculum objectives of schools of social work.

Schools are turning out more and more graduates each year, yet their commitment and identification with the profession are not evident in the education for and nature of practice.

During the last two decades practice has moved from a relatively uniformed few forms to a highly permissive and flexible set of options for professional practice. The end results have been described as a pluralistic, illdefined, changing and fluid fields of practice with no one form that can be agreed upon as control to all. This issue of core in the past five years has been addressed on a number of levels. One level that has not been addressed adequately is the theoretical assumptions of professionalization within social work education.

(c) Atkinson College/
York University
AK/SW408
D. Herberg

Assignment

Concepts and Constructs

'Concept' and 'construct' have similar meanings. There is one important distinction. 'Concept' expresses an abstraction formed by generalization from particulars. "Weight" is a concept: it expresses numerous observations of things that are more or less 'heavy' or 'light'. "Mass", "energy" and "force" are concepts used by physical scientists.

"Achievement" is a concept used in previous class notes. It is an abstraction formed from the observation of certain behaviours in children. "Intelligence", "aggressiveness", "conformity", "honesty" are other examples of concept.

'Construct' is a concept. It has the added meaning of having been deliberately and consciously invented or adopted for a special scientific purpose. "Intelligence" is both a concept and construct. It is both an abstraction from behaviour (concept) and a construct when it enters into theoretical schemes (e.g. school achievement is in part a function of intelligence and motivation) and when it is so defined and specified that it can be observed and measured.

List some concepts and constructs from the readings you have done (Schachter, Roe, Meyer and Borgatta).

Definitions

The distinction between 'concept' and 'construct' leads naturally to another important distinction: that between constructs and variables. Words or constructs can be defined in two general ways. First, a word can be defined by using other words a dictionary does e.g., "intelligence is operating intellect". Second, we can define a word by telling what actions or behaviours it expresses or implies. Intelligence defined this way requires we specify what behaviours of children are "intelligent" and what are "not intelligent".

Thus, we come to two types of definitions.

A constitutive definition defines a construct with other constructs e.g. weight is the heaviness of objects.

An operational definition assigns meaning to a construct or variable by specifying the activities or "operations" necessary to measure it. It is a sort of manual of instructions to the investigator e.g. do such-and-such in so-and-so manner. In short, it defines or gives meaning to a variable by spelling out what the investigator must do to measure it. e.g. intelligence is a score on X intelligence test or intelligence is what X intelligence test measures.

Try to find some examples of these definitions in Schachter, Roe and Meyer and Borgatta.

Variables

A variable is a symbol to which numerals or values are assigned; a variable is a property that takes on different values; a variable is something that varies.

A variable with only two values is called dichotomous. 'Sex' is an example. The two values are, of course, male and female.

Give another example of dichotomous variable.

A variable with three values is called a trichotomous variable. 'Ethnic origin' as constructed from the Canadian Census is an example. The values used there are British, French and Other.

Give another example of a trichotomous variable.

A variable with many values is called a polytomous variable. 'Religion' is an example. Here the values are Protestant, Catholic, Jew, Other.

Give three examples of polytomous variable.

Are the following words variables? If they are variables give values for them; if not, turn them into variables and

give them values:

work

authority

play

politics

education

money

health

marriage

race

B. Statistical Examples

1. Computer Focus

- (a) The University of British
Columbia
School of Social Work

Questionnaire Data Processing and Analysis: Exercise 1

- i From the Volunteer Questionnaire, select any 2 closed ended questions, each of which in your opinion is worth cross classifying with from 4-6 other variables. For example, you might feel that satisfaction with the program might be related to length of time in the program, plus a number of other variables.
- ii You will thus arrive at a set of 4-6 cross classifications for each of the two variables you select. Explain why you think these cross classifications might prove interesting. What relationship would you expect to find?

References

James Bjerring et al, U.B.C. MVTAB, June 1974

Text (Selltiz et al 1976) Chapter 13, pp. 1-4.

Questionnaire Data Processing and Analysis, Exercise 2: Coding

- i For each of the variables selected in exercise 1, develop a coding plan suitable for use with MVTAB. As part of this plan, use the code '0' (i.e. zero) for items not answered (missing data).
- ii Allowing for a subject number, make a plan for arranging the data on IBM cards. Use Bjerring p.9 as a model. How many cards per question do you need? How many columns on each card?
- iii Pick one of cross classifications from exercise 1 and make 'dummy' tables (i.e. with fictional data) showing respectively frequencies, horizontal, vertical and total percentages.
- iv Do your data appear to show any relationship between your variables? Explain how the data would look if there were, respectively, no relationship and a 'perfect' relationship between your variables.

References

Bjerring et al pp. 5-10.

Text, 466-474, 477-479, table 14.2; p. 492.

Questionnaire Data Processing and Analysis, Exercise 3: Table Specifications

- i Now that you have decided what cross classifications you wish to carry out, and which variables are to be punched in which columns of your data cards, write out the cross classifications you plan to do in terms of card columns as follows:
 - card col (write in) is to be cross classified with cards cols (write up)
 - card col (write in) is to be cross classified with card cols (write in list).
- ii Describe the TABLE options you want (Bjerring et al pp.5-10) and why you prefer them.
- iii Write the TABLE specifications to request the cross classifications you want (Assume that you have nominal data for all variables).

References

Bjerring, et al, pp. 23-26 (sections 1-4).

NOTE: postpone until after exercise 5 reading section C on page 24.

Questionnaire Data Processing and Analysis, Exercise 4: Writing a Program

- i Familiarize yourself with a FORTRAN CODING SHEET, in which each row corresponds to an IBM card. Note that this coding sheet may be used to record both data or programming instructions, to be punched onto cards.
- ii For practice, enter 'data' from 2 fictional cases onto the coding sheet, using your selected variables.
- iii Referring to the relevant sections of the MVTAB manual, write a complete program to output the

tables specified earlier. Password may be omitted (can be obtained later from the instructor). The program should be printed in pencil on the Fortran Coding Sheet. Note that except for words beginning with a dollar sign (which must begin in col. 1) all other instructions may be located anywhere, provided that you do not break a word at the end of one line and the beginning of the next.

References

Bjerring sections IV, V, IX (already read) XX.

Questionnaire Data Processing and Analysis, Exercise 5: Interpreting Statistical Output from MVTAB

- i Using the texts referred to below*, review (1) statistical hypothesis testing (2) chi square.
- ii Explain how you would interpret the following:

Example 1: $\chi^2 = 4.67$ DF=1
but one cell has expected frequency less than one.

Example 2: same, except that all expected frequencies are > 5 .

Example 3: You have a table with 6 cols. and 4 rows. Chi square = 17.82. Two cells have expected frequencies less than 5.

NOTE: for these examples you will need a table of χ^2 values.

References

Bjerring, et al pp. 80-84 (pages 82-84 need not be studied in full detail -- merely familiarize yourself with them).

Sidney Siegel, Nonparametric Statistics for the Behavioural Sciences pp. 1-34. 174-179.

NOTE: Now you can read Bjerring p. 24, section C.

* or a text of your own choosing.

Questionnaire Data Processing and Analysis, Exercise 6
Interpreting MVTAB Output

- i Using the output from exercise 6, write a brief interpretation of the following output:
 - (1) the tables (frequency, horizontal, vertical or total percentages).
 - (2) If any chi squares are invalid, prepare a condensed table in which expected frequency requirements are satisfied.
 - (3) Using a calculator (one is available at the School) recalculate chi squares for these condensed tables and interpret them.

Questionnaire Data Processing and Analysis, Exercise 8
A Slightly Fancier Program

- i Create a new variable 81 such that its values are 0 if some other variable is 0, 1 if the other variable is greater than 0 but less than 3, and 2 otherwise. (Use a SET). Choose the other variable from your initial set.
- ii Create a 2nd new variable 82 that is the sum of no fewer than 3 of your initial variables.
- iii Transform all blanks in your data to zeroes.
- iv Provide your variables 81 and 82 with DEFS and NAMES.
- v Write and run a program to cross tabulate 81 with another variable. Same for 82.
- vi Interpret the output.

References

Bjerring et al, sections VII, XI, XII, XIII, XV

(b) University of Regina
Faculty of Social Work

SW Computer Assignment

Variable	Column	Cases = 78
1	1-3	Total cumulative grade point average
2	4-6	Social work grade point average
3	7	Type of program (1=internal; 2=BSW)
4	8	Status (1=internal; 2=external)
5	9	Sex (1=male; 0=female)
6	10-11	Age
7	12	Location of student (1=Regina; 2=Saskatoon; 3=Moose Jaw; 4=Prince Albert; 5=Weyburn; 6=Melfort; 8=Other Sask.; 9=out of province; 0=no information)
8	13	Previous degrees student has (1=B.A.; 0=no degree)

From the above information, write the INPUT FORMAT. In addition, write an SPSS program that could be used to analyse the data (this would be a descriptive analysis of the 1975 graduates). Your program should include such things as VARIABLE LIST, VALUE LABELS...etc.

*The information in parentheses will be the value labels for the corresponding variables. Remember that value labels can be up to 20 characters in length. Please use the same numbers because the data has already been coded according to these numbers in parentheses.

*You will need a MISSING VALUES card for this program. Use 0 as a missing value where zeros do not appear as a value label(s) for any variable. Use 9 as a missing value where zeros do appear as a value label. Consult the manual for more explanation about MISSING VALUES.

*BREAKDOWN the continuous variables, age and the two G.P.A.'s by the categorical variables status, sex, and type of program.

*Do descriptive statistics on all variables.

*Do a Pearson Correlation for the continuous variables.

*Do a bivariate distribution of the above continuous variables.

2. Non-Computer Focus

- (a) Memorial University of
Newfoundland
School of Social Work
J. Dempster

LAB SESSION NO. 1 - MEASURES OF CENTRAL TENDENCY

Using data on the following questions:

- (3) Mother's Age
- (6) Number of children
- (7) Ancestry
- (7) Student rating of campus library services

Answer the following questions:

- (1) Mean
- (2) Median
- (3) Mode
- (4) Draw up a frequency table
- (5) Do a frequency Polygon

LAB SESSION NO. 2

Using grouped data with categories and frequencies of questions:

- (2) Students Age
- (5) No. of siblings
- (11) No. of hours spent studying
- (20) Student attitude ratings on doing questionnaires

Calculate:

- (1) The Range
- (2) The Sample variance s^2

(3) The Sample Standard deviation

QUESTIONNAIRE

Instructions to Respondent:

You are being asked to complete this questionnaire to generate data for the S.W. 4420 (Introductory Research Methods in Social Work) class to use in learning statistics. It is my belief that students are more interested in applying statistical measures and analysing data relevant to them, than they are in doing problems from books in things like the mean rate of rainfall in Utah. Fourth year students will have access to the data.

There is no identifying information at all required of students other than to state which year of the programme you are in. This is used so that we can compare the two classes on the different variables. There are a few questions which you might not wish to answer and provision had been made - just fill in DO NOT WISH TO ANSWER on the question. Otherwise I hope that most of you will complete the questionnaire and do so as fully as possible. Many thanks to you all.

PLEASE CIRCLE APPROPRIATE ROW NUMBER.

ARE YOU IN 4th YEAR _____ OR 5th YEAR _____ OF THE SOCIAL WORK PROGRAMME?

		Column	Row
i	What is your sex?	1	
	Male _____		0
	Female _____		1
ii	What is your age?	2-3	
	15 Years		0
	16 "		1
	17 "		2
	18 "		3
	19 "		4
	20 "		5
	21 "		6
	22 "		7
	23 "		8
	24 "		9
	25+ "		X
			Y

ACTUAL BIRTH DATE

Day _____ Month _____ Year _____

		<u>Column</u>	<u>Row</u>
iii	What is your mother's age?	4-5	
	N.A. (mother not living)		0
	N.K. (do not know)		1
	30-34 Years		2
	35-39 "		3
	40-44 "		4
	45-49 "		5
	50-54 "		6
	55-59 "		7
	60-64 "		8
	65+ "		9
iv	What is your father's age?	6-7	
	N.A. (father not living)		0
	N.K. (do not know)		1
	30-34 Years		2
	35-39 "		3
	40-44 "		4
	45-49 "		5
	50-54 "		6
	55-59 "		7
	60-64 "		8
	65+ "		9
v	How many siblings (total brothers and sisters do you have)?	8	
	N.A. (you are only child)		0
	1		1
	2		2
	3		3
	4		4
	5		5
	6		6
	7+		7
	ACTUAL NO. OF BROTHERS _____		
	ACTUAL NO. OF SISTERS _____		
VI	How many children would you like to have (counting any you may already have)	9	
	N.K. (Do not know)		0
	N.A. (Do not want any children)		1
	1		2
	2		3
	3		4
	4		5
	5		6
	6		7
	7+		8

		<u>Column</u>	<u>Row</u>
	Actual no. of children you would like to have_____.		
vii	Where did your ancestors come from?	10	
	N.K. (Do not know)		0
	Native Indian		1
	Native Eskimo		2
	England		3
	Ireland		4
	Scotland		5
	Wales		6
	France		7
	Rest of Europe		8
	Asia		9
	Other_____		
viii	What is (or was) your Father's occupation?	11	
	Professional		0
	Semi-professional		1
	Proprietor (large)		2
	Proprietor (small)		3
	Clerical		4
	Sales		5
	Skilled		6
	Semi-skilled		7
	Unskilled		8
	Farming		9
	Fishing		X
	Other_____		Y
ix	Where did you live during most of your growing up years (i.e. between 0 and 15 years)	12	
	St. John's		0
	Corner Brook		1
	Newfoundland Outport		2
	Labrador		3
	Mainland Canada		4
	Other_____		5
x	Where would you like to live after you graduate and for the following five years?	13	
	N.K. (Do not know)		0
	St. John's		1
	Newfoundland Outport		2
	Labrador		3

		<u>Column</u>	<u>Row</u>
	Mainland Canada		4
	Other _____		5
xi	How many hours do you spend studying on an average day? (Do not include hours in class)	14	
	N.K. (Do not know)		0
	Less than one hour		1
	One hour		2
	Two hours		3
	Three hours		4
	Four hours		5
	Five hours		6
	Six+		7
xii	How many hours do you spend in an average week on active sports (like running, basketball, squash, swimming etc.)	15	
	N.K. (do not know)		0
	N.A. (do not participate)		1
	Less than one hour		2
	One hour		3
	Two hours		4
	Three hours		5
	Four hours		6
	Five hours		7
	Six+ hours		8
xiii	If there were a Provincial election tomorrow and you were voting would you vote....	16	
	N.K. (do not know)		0
	Liberal		1
	N.D.P.		2
	P.C.		3
	Independent		4
xiv	If there were a federal election tomorrow and you were voting would you vote.....	17	
	N.K. (do not know)		0
	Liberal		1
	N.D.P.		2
	P.C.		3
	Independent		4

		<u>Column</u>	<u>Row</u>
xv	At the present time, what is your educational goal?	18	
	N.K. (undecided)		0
	Bachelors degree		1
	Masters degree		2
	Doctoral degree		3
	Other, specify _____		4
xvi	How would you rate the food service on campus. (circle one)	19	
	1 2 3 4 5 6 7		
	Good _____ Bad		0
			1
			2
			3
			4
			5
			6
xvii	How would you rate the library service on campus? (circle one)	20	
	1 2 3 4 5 6 7		
	Good _____ Bad		0
			1
			2
			3
			4
			5
			6
xviii	What is your attitude toward this University? (circle one)	21	
	1 2 3 4 5 6 7		
	Good _____ Bad		0
			1
			2
			3
			4
			5
			6
xiv	What is your attitude toward this School? (circle one)	22	
	1 2 3 4 5 6 7		
	Good _____ Bad		0
			1
			2
			3
			4
			5
			6

		<u>Column</u>	<u>Row</u>
xx	What is your attitude toward doing questionnaires? 1 2 3 4 5 6 7 Good Bad	23	0 1 2 3 4 5 6
xxi	Do you feel abortion should be performed for any woman requesting this Service? 1. Strongly agree____ 2. Agree____ 3. No opinion____ 4. Disagree____ 5. Strongly disagree__	24	0 1 2 3 4
xxii	What is your height (approx.) Specify_____	25	
xxiii	What is your weight (approx) Specify_____	26	
xxiv	On a scale of 0 (no intelligence) to 100 (highest possible intelligence) where would you rank yourself (circle one?) 0 10 20 30 40 50 60 70 80 90 100	27	
xxv	Do you consider yourself a very religious person? Yes No	28	0 1

(b) Dalhousie University
The Maritime School of
Social Work
Dr. D. O'Brien

RESEARCH LAB QUESTIONS

CORRELATION & REGRESSION

- i The following table represents the chemistry grades corresponding to various intelligence test scores for a random sample of 12 freshmen at East Point Academy.

Table I	STUDENT	TEST SCORE X	CHEM. GRADE Y
	1	63	87
	2	50	74
	3	55	76
	4	65	90
	5	55	85
	6	70	87
	7	64	92
	8	70	98
	9	58	82
	10	68	91
	11	52	77
	12	60	78

-Plot the data in the table to form a scatter diagram.

-From inspection of the scatter diagram would you say that

- i) The points form a straight line?
- ii) What would this indicate to you?
- iii) How are values of X and Y related?
- iv) If correlated, would this be a positive or negative correlation? Why?

ii -What does correlation mean?

-What is a correlation co-efficient?

iii What does zero correlation mean, and what would it look like on scatter diagram?

iv -Compute the value of r (correlation co-efficient) for Question #1, that is, use the data of

Table #1 to measure the linear relationship between chemistry grades and intelligence test scores. Try using the whole score method of computing r . You may use other formulae if you find them easier)

Where $r = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \sqrt{N\sum Y^2 - (\sum Y)^2}}$

Hint→ Computations are more easily carried out by constructing a table in which to display the fundamental quantities needed in the formula, namely $\sum X$, $\sum Y$, $\sum X^2$, $\sum Y^2$ and $\sum X Y$.

-From the value of r obtained, what would you conclude about the relationship between freshmen chemistry grades and intelligence test scores?

- v Compute and interpret the correlation co-efficient for the following data on height and weight of six elves.

ELVES	HEIGHT (X)	WEIGHT (Y)
1	12"	18 lb.
2	10"	17 lb.
3	14"	23 lb.
4	11"	19 lb.
5	12"	20 lb.
6	9"	15 lb.

- vi What assumptions are involved (re distribution and measurement) in the interpretation of r (correlation co-efficient) for predictive purposes?

RESEARCH LAB QUESTIONS

- i After long years of observation in the classroom, a grade school teacher developed a strong suspicion that intelligence and leadership were related variables. In an effort to test this hypothesis, she/he obtained IQ estimates of all children in the class, and had another teacher rank students according to set leadership criteria. Resulting measurements constituted an ordinal scale:

IQ RANK	LEADERSHIP RANK
1	4
2	2
3	9
4	1
5	7
6	10
7	8
8	13
9	5
10	3
11	11
12	6
13	12
14	15
15	14

Using the Spearman r , or Rank Correlation Co-efficient, what would be the correlation between IQ Rank and Leadership Rank?

- ii. A psychological study involved the rating of rats along a dominance submissiveness continuum in order to determine the reliability of the ratings the ranks given by the two different observers were tabulated:

ANIMAL	RANK OBSERVER A	RANK OBSERVER B	ANIMAL	RANK OBSERVER A	RANK OBSERVER B
A	12	15	I	6	5
B	2	1	J	9	9
C	3	7	K	7	6
D	1	4	L	10	12
E	4	2	M	15	13
F	5	3	N	8	8
G	14	11	O	13	14
H	11	10	P	16	16

- Are the ratings reliable? (Find r_s). Explain your answer.
 -Could this correlation have occurred by chance.

- iii. If you are trying to ascertain the relationship between two variables measured in form of nominal scale -
 (a) what correlation co-efficient would you use?

(Also, what pictorial form?)

(b) This (a) would be based on what statistic?

- iv From which correlation co-efficient (i.e. Spearman Rank - difference, Pearson r, or contingency co-efficient) could you make predictions, and use in setting limits on the accuracy of predictions?
- v What is the "Power of a Statistic" - Define. (Kolstoe p. 209).
- vi How are α and β related? and How does this relate to the power of a statistical test?

STEPS IN HYPOTHESIS TESTING TYPE I & II ERROR

- i What is a parameter? What is a statistic?
- ii How does parametric test differ from a non-parametric test?
- iii The power of a test is represented by the expression $1 - \beta$
What can be done to increase the power of a test?
- iv Explain what type I (α) and type II β error are.
- v When would we employ one-tailed rather than two-tailed test?
- vi A researcher sets $\alpha = 0.01$ for the rejection of H_0 . He conducts a study in which he obtains a p - value of 0.02 and fails to reject H_0 .
- vii Does the null hypothesis in a one-tailed test differ from the null hypothesis in a two-tailed test?
- viii Does the alternative (or research) hypothesis in a one-tailed test differ from the alternative hypothesis in a two-tailed test? (Give an example)
- ix A researcher draws 5 random samples of size $N=100$, from Grade 12 students in Cape Breton; computes the Mean for each sample's scores on the final French examination, and applies a statistical test

to the distribution of the sample Means. The test shows that the 5 Means do not differ from each other significantly. What is meant by the expression "do not differ from each other significantly". (What is significance?)

x Using data of previous question - we cannot be certain that the population from which samples were drawn was normal

(a) What can we assume about the sampling distribution of the Means?

(b) What important mathematical theorem allow us to make this assumption?

*N.B. "The purpose of statistical generalizations is to say something about various characteristics of the population studied on the basis of known facts about a sample drawn from that population or universe" (Key to statistical inference and importance of careful samples.)

xi What is a hypothesis?

-How do you go about testing a hypothesis?

BINOMIAL EXPANSION

i In (11) eleven flips of an honest coin, what is the probability of getting
-exactly four heads?
-exactly seven heads?
-less than three heads?

ii Construct a binomial sampling distribution when $N=8$ $P=Q=\frac{1}{2}$ and answer the following questions:

-What is the probability that
-5 or more will be in the P category?
-Probability of 6 or more in P category?
-Four or fewer in P category?

iii For above questions use both table and formula
$$\frac{n!}{x!(n-x)!} p^x q^{n-x}$$
 to compute answer.
(two modes of getting same answer.)

- iv Describe what happens to the distribution of sample Means when you
 - increase the size of each sample
 - increase the number of samples
- v Explain why the standard deviation of a sample will usually underestimate the standard deviation of A population.
- vi Given that $\bar{X} = 40$ $N = 24$ from A population in which $\sigma = 8$, find
 - the 95% confidence limits for μ
 - the 99% confidence limits for μ
- vii Overton University claims that because of its superior facilities and close faculty supervision, its students complete the Ph.D. program earlier than is usual. They base this assertion on the fact that the national Mean age for completion is 32.11, whereas the Mean age of their 26 Ph.D.'s is 29.61 with $S = 6.00$

Find the interval within which you are 95% confident that the true population Mean (average age for Ph.D.'s at Overton University) probably falls.

THE NORMAL CURVE & PROBABILITY

- i List three properties or characteristics of the normal curve.
- ii In a single toss of an honest die what is the probability of
 - getting A 6?
 - not getting A 6?
 - getting A 1 or A 6?
 - getting A 1 and A 6?
 - getting either an odd number or A 6?
- iii List all the possible outcomes of a coin that is tossed three (3) times.
Calculate the probability of
 - 3 heads
 - 3 tails
 - 2 heads and 1 tail
 - at least 2 heads
- iv A card is drawn at random from a deck of 52 playing cards. What is the probability that
 - it will be the Ace of Spades?
 - it will be an Ace?

- it will be an Ace or a Face Card?
- it will be a Spade or a Face Card?

v In a single throw of two dice, what is the probability that

- a 7 (seven) will appear?
- a Doublet (2 of same number) will appear?
- a Doublet or an 8 will appear?
- an even number will appear?

vi If the probability of drawing a red ball from an urn is .40 and the probability of drawing a white ball from a second urn is .30, what is the probability of drawing a red ball and then a white ball?

vii A well known test of intelligence has a Mean of 100 and a standard deviation of 16.

-What is the probability that someone picked at random will have an IQ of 122 or higher?

-There are IQ's so High that the probability is 0.05 that such IQ's would occur in a random sample of people. Those IQ's are beyond what value?

-There are IQ's so Extreme that the probability is 0.05 that such IQ's would occur in a random sample of people. Those IQ's are beyond what values? (Hint: refers to both ends of scale)

-The next time you shop you will undoubtedly see someone who is a complete stranger to you. What is the probability that his IQ will be between 90 and 110?

Try this one too - BONUS!

-What is the probability of selecting two people at random,

- i) with IQ's of 122 or higher
- ii) with IQ's between 90 and 110
- iii) one with an IQ of 122 or higher, the other with an IQ between 90 - 110.

viii The following (hypothetical) data show the distribution of the percentage of farm families in 60 counties. What is the standard deviation?

Interval %	Frequency
10 - 19	7
20 - 29	16
30 - 39	21
40 - 49	12
50 - 59	4

$$\Sigma f = N = 60$$

*for grouped data
where

$$S = \sqrt{\frac{\Sigma f (\text{midpoint})^2}{N} - \left| \frac{\Sigma f (\text{midpoint})}{N} \right|^2}$$

ix Problems for $\bar{x}$ score

Let us assume that the mean of the general population, μ is equal to 100 on a standard IQ test, and the standard deviation, $\sigma = 16$. It is assumed that the variable is normally distributed.

-John Doe obtains a score of 125 on an IQ test. What percent of cases fall between his score and the Mean?
What is his percentile rank in the general population?

-What about a score of 93 on an IQ test? What would be the percentile rank in the general population?

$$z = \frac{X - \bar{X}}{S}$$

PROBLEMS

x Compute the range, average deviation (AD), and standard deviation (S.D.) of the distribution of scores given below:

X_i	F_i	$F_i X_i$
20	1	20
19	4	76
18	6	108
17	9	153
16	10	160
15	16	240
14	10	140
13	8	104
12	5	60
11	4	44
10	2	20
$N = 75$		$\Sigma = 1,125$

- xi The distribution of scores in Problem 1 is approximately symmetrical. Assuming that the distribution does not deviate greatly from the form of a normal distribution, how many scores would you expect to find between the following limits:
- Between $\pm 1S.D.$ and $-1S.D.$?
 - Between $\pm 2S.D.$ and $-2S.D.$?
 - Between $\pm 1S.D.$ and $\pm 2S.D.$?
- How many scores actually fall between $\pm 1S.D.$ and $-1S.D.$?
- xii If a normal distribution has a mean = 118 and $S.D. 11$,
- What percentage of the scores will be found between the score limits 107 and 118?
 - What percentage will lie below a score of 129?
 - What percentage will be expected to lie above 140?
- xiii Construct a cumulative frequency and a cumulative percentage distribution for the following data:

CLASS INTERVAL	f	CUMULATIVE f	CUMULATIVE %
179-183	2		
174-178	2		
169-173	11		
164-168	21		
159-163	27		
154-158	37		
149-153	33		
144-148	53		
134-138	44		
129-133	31		
124-128	27		
119-123	30		
114-118	16		
109-113	7		
104-108	5		

- The score or potential score below which 300 cases fall is _____.
- The interval which includes the 368th frequency is _____.
- The score below which 91% of the cases fall is _____.
- A total of 214 cases fall below a score of _____.
- The number of cases falling below a score of 173.5 is _____.
- the percentage of cases falling below a score of 123.5 is _____.
- N = _____.
- i = _____.
- The range is _____.

xiv From this data find the score at
 -the 15th percentile
 -the 50th percentile

FORMULA

$$\text{PERCENTILE} = \frac{(N) (\%) - \text{c.f. in interval below } |X_i - 1|}{f}$$

Remember: N = is the total # of cases
 % = is the desired percentage
 c.f. = is the cumulative frequency in interval below
 f = is the frequency of cases in the interval
 i = is the width of the interval
 l r l = is the lower real limit of the interval

-Also - A score of 124 is at what percentile rank?

FORMULA

$$\text{PERCENTILE RANK} = \frac{(X - l.r.l.) \times f + c.f. \text{ in interval below}}{N} \times 100$$

where:

X is the score

l.r.l. is the lower real limit of the interval

i is the width of the interval

f is the frequency of cases in the interval

c.f. is the cumulative frequency in interval below

N is the total # of cases

PROBLEMS FOR CHI SQUARE

Problem # 1

A college has 500 women students and 1000 men students. The introductory Zoology course has 90 students of whom 50 are women. Suspecting that women tend to elect Zoology more frequently than men do, you decide to test your hypothesis statistically with the observation from this class.

- i What is the null hypothesis you should use in making this test?
- ii What is the expected number of women in a class of 90 on the basis of this null hypothesis?
- iii If the null hypothesis is true, how would one account for the difference between the observed frequency and the expected frequency?
- iv What is your alternate hypothesis?
- v What probability must you calculate in order to test the null hypothesis?
- vi Under what circumstances can you accept your alternate hypothesis?
- vii Use chi-square to test whether the Zoology class

with 50 women and 40 men enrolled in it will support the null hypothesis that women and men tend to elect zoology equally often.

Problem # 2

Use chi square to test the following hypothesis:

Participation in block clubs is related to level of aspiration - A.05 level of significance is required to reject the null hypothesis.

Block Club Participation Status
By Level of Aspiration

Participation	Aspiration	
	High	Low
Active ---	12	5
Inactive ---	17	25

Problem # 3

A college suspects that its rising tuition rate has changed the composition of its student body with respect to economic level. It classifies the students of the class of 1963 into three groups according to their fathers' incomes (high, middle, low), and taking into account the nationwide change in salary levels during the intervening 10 years, it classifies the students of the class of 1953 into three comparable groups.

The frequencies in these three categories for each of the two classes are shown in the table below. Using chi square, determine whether it is possible to reject, at the .05 level, the hypothesis that these two groups come from the same population with regard to economic position.

	Fathers Income			Total
	High	Middle	Low	
Class of 1953	450	750	400	1600
Class of 1963	1050	1650	500	3200
TOTAL	1500	2400	900	4800

Problem # 4

Students enrolled in an introductory sociology course were classified as to occupational aspirations for self or spouse. Using Chi square test the null hypothesis that male and female sociology students do not differ as to occupational aspiration.

Sex	High Aspirations	Low Aspirations	Total
Male	43	10	53
Female	71	93	164
Total	114	103	217

IV EXAMINATIONS

A. Conceptual Thinking

(a) The University of Regina (Selected)

Section I (40%)

- i When an association between variable 'X' and variable 'Y' can be entirely explained by variation in a third variable we say the relationship is _____.
- ii One _____ measure of Faculty status is to look at each individual's professorial rank (i.e, professor, associate professor, assistant professor, etc.)
- iii The largest body of individuals being researched in a given study is referred to as the a) _____. Usually, however, the researcher chooses only to look at a b) _____. It is important however, that b) be c) _____ive. In order to increase c) iveness b) should be selected _____ and _____.
- iv When conducting a classical experiment the _____ receives treatment the _____ is and is treated identically in every other way, except that it does not receive the treatment.
- v If you wished to study the average number of moves the welfare recipients made in a given 5 year period, name two sources you might consult. a) _____
b) _____.
- vi Find the mean, median and mode of the following data:
5, 4, 3, 3, 2, 1, 6
Mean _____
Median _____
Mode _____
- vii What is the purpose of tests in courses. (List at least three).
- viii What is research that introduces planned change called? (3)
Give a hypothetical example of such a project.

- ix Research greatly effects the political decision-making process. Briefly discuss this statement. (5)
- x Should every newly introduced social program be evaluated? List two reasons to support your answer. (4)
- xi A serious problem in many Social Service research projects is that adequate _____ often do not exist to clearly indicate cause-effect relationships.
- xii _____ seeks to establish the costs of an activity as it relates to its accomplishments. It is often used in budgetary decision making. Give one argument for not using it.
- xiii What do you see as the basic components in an evaluation. List at least five and briefly define each. (5)
- xiv What is the distinction between effect and effectiveness? (2)
- xv A test where the subject is unaware of whether or not he is receiving the purported treatment is called a _____.

Section II (20% - 2 X 10%)

At a political rally an incumbent tells the audience that they have never had it so good, under the government of his party. The following day his opposition reacts that really the people have never had it so bad and that matters would be much better if they were in power. Briefly outline an experiment to determine who is correct. (NOTE: the experiment need not be practically possible.)

The UNESCO Institute for Education in Hamburg F.R. Germany is devoted to the pursuit of studying and promoting "life-long education" in a variety of countries. Life-long education is defined as the totality of experiences which an individual has throughout his life (not necessarily obtained in any institutional context) which contribute to that person's quality of life and ability to achieve his potential. If you were assigned the task of evaluating how Life-long

education applied to the field of Social Work, what would you propose?

Section I (Exam B)

There is an old joke about a farmer who takes literally forever to plant his crop each year because he first of all has to examine each seed to make sure it is right side up before placing it into the soil. What keeps him persisting in this practice is the fact that "it works." If a researcher were to assist him in improving his agricultural management practices, what type of experiment could he perform for him to show him that his procedure was a valuable waste of time? What principle would this be an example of?

- (b) The University of Calgary (Selected)
- i What is the difference between a nominal and an operational definition?
 - ii An empirically testable statement of the Relationship between two or more variables is called: _____
 - iii The two major categories of sampling techniques are called: _____
 - iv The two main functions of the hypothesis are: _____
 - v The variable which is synonymous with the effect in an experiment is called: _____
 - vi What is meant by the "research spiral"?

B. Research Design

(a) The University of Calgary (Selected)

This is a take-home examination on the contents of the assigned text (Labovitz). It will count for 20% of the total marks of the course.

- (i) A social scientist, after completing a methodologically sound experiment, found a significant positive relationship between single mothers staying at home (i.e. not going out to work full-time) with their children between the ages of 6 and 16 and the apprehensions of these children by the police for various delinquent acts. The scientist concluded that mothers staying at home were the cause of juvenile delinquency among the children from these homes. Discuss the scientist's rationale in terms of the concept of causality. (3 points)
- (ii) Attempt both a nominal and an operational definition of the following concepts:
 - (a) Bicycle
 - (b) Juvenile Delinquent
 - (c) Social Work Values(3 points)
- (iii) What are the major differences between a probability (random) and a non-probability (non-random) sample? Give an example of where you might use each. (2 points)
- (iv) For each of the following research questions, select the appropriate research design and briefly state your rationale for your selection.
 - (a) You are interested in ascertaining the causal factor(s) in the relationship between academic performance of social work students and their previous work experience.
 - (b) You want to know the extent of the incidence of child abuse among the population of working mothers in Calgary.
 - (c) You are curious about possible factors that may play a role in persons wanting to become volunteers for social organi-

zations (clubs, agencies, departments, institutions).

(3 points)

- (v) Imagine a continuum from "least" to "most".
(a) Where on such a continuum would you put the major types of research design in terms of the intensity or depth of their search? (b) Where, again, would you put them in terms of control of variables? (3 points)
- (vi) A social researcher is attempting with an exploratory or case study design to investigate the factors involved in citizens' attitudes toward child abuse. He has selected a representative sample and must decide on a data collection technique. Which technique would you choose and for what reasons? (If you think more than one technique would be appropriate, justify your answer.) (2 points)
- (vii) A social researcher found that in applying a certain test over time, the results were consistent. Would he be justified in calling his test valid? Would he be justified in calling it reliable? Explain your answer. (2 points)

(b) University of Windsor (selected)

CHOOSE THE MOST APPROPRIATE ANSWER

- (i) One of the following is a requisite for Quantitative Descriptive research:
- a) Antecedent variables must precede the independent variable
 - b) Variables must be operationally defined
 - c) Dependent variable must be manipulated by the investigator
 - d) At least one control group must be used
 - e) There must be randomization of assignment to control and treatment groups
- (ii) Which sub-type is an Exploratory Study?
- a) Specific data collection procedures

- b) Variable relationship study
 - c) Hypothesis testing study
 - d) Program evaluation study
 - e) Laboratory study
- (iii) Exploratory Research differs from other types of research because one of its major purposes is to:
- a) Evaluate programs of service
 - b) Determine characteristics of a population
 - c) Refine instruments for measuring variables
 - d) Test hypothesis to determine cause
 - e) Seek-out meaningful relationships by use of techniques such as factor analysis
- (iv) The central question when evaluating a research report is:
- a) What degree of preciseness has been obtained?
 - b) What procedures have been used?
 - c) What is the major purpose of the project?
 - d) What degree of relative certainty has been produced?
 - e) None of the above questions
- (v) The Empirically oriented practitioner has as a primary objective:
- a) contributing to knowledge through clinical research
 - b) serve client needs and research methodology enriches and strengthens practice procedures
 - c) both a and b
 - d) neither a or b
- (vi) Research in interpersonal practice has several sources of data: One of the following is FALSE:
- a) interview
 - b) check lists
 - c) records
 - d) electromechanical devices
 - e) non of the above are FALSE

Part II

- (i) Answer either:
- Discuss the relationship between Statistics, Research Methods and the Methods of direct social work practice.

or

-Discuss the role of Research and Statistics in the development of a Social Work Profession and a Professional Social Worker.

(ii) Answer either:

-Discuss the advantages and disadvantages of the following data collection methods: Questionnaire, Interview and Observation.

or

-Give the following hypothesis that:

"Motivation and diagnostic ability are related to achievement in learning research methods".

Tell what data you would collect and how you would test the hypothesis including your plans for data analysis, and your selection of statistics.

(c) The University of Regina (Selected)

(i) In conducting a study of a certain population, a researcher selects a random sample. Describe two different types of errors that are liable to crop up when he attempts to generalize the results to the population from which the samples were drawn and ways of dealing with them.

(ii) The Pepsi commercial showing the preferences of Coke drinkers for either of the two drinks has a major flaw in its research design, consisting of providing incomplete information. Treating both the dependent variable (test preference) and the independent variable (category of regular preference) as a binary* nominal variables, demonstrate how the commercials stated finding that "over half of the regular Coke drinkers tested preferred the Pepsi" could (1) lead the listener to assume what about the preferences of the regular Pepsi group; (2) actually not be very favorable to Pepsi. (Note: A 2X2 matrix (contingency table) should be sufficient to organize the data in order to answer this question).

* Having only two possible values.

- (iii) The following was taken from the brochure describing the 1976 Saskatchewan Association of Social Workers Annual Institute.

The theme of this 1976 Annual Institute is "Quality of Service: Whose Responsibility?" While the responsibility of "social caring" ultimately rests in the hands of many people including service workers, service agencies, government, the public and clients themselves, the purpose of this institute is to consider how S.A.S.W. can become more responsible in achieving quality of social work services in Saskatchewan.

Accordingly, this institute will focus on the three dimensions of function, membership and structure that a professional social workers' association should have in this province.

Our keynote speaker will help us consider the meaning and implications of quality service in social work. Following the keynote address the participants will join workshops on subject areas related to functions S.A.S.W. might pursue to achieve quality social work services, such as education, professional employment, social action, public accountability, professional identity as well as public education and public relations.

Analyze this general description of the mission of the Institute in terms of how this issue of Quality of Service might be dealt with from an evaluative research perspective.

- (iv) Analyze this article in terms of Ahenakew's description of the problem and the method he suggests of overcoming it. Design an experimental situation that could be used to test the legitimacy of his claim:

The president of the Saskatchewan Federation of Indians (SFI) told a conference of social service

workers Friday that the federal government's policies affecting Indians have been a disaster.

Chief David Ahenakew told the representatives of the dozen agencies attending the Western Canadian Conference of Family Serving Agencies that the government representing them "...in its zeal and determination to help us by changing us into carbon copies of you, has been a dismal failure."

Ahenakew said that some small changes have been made in government programs "...but make no mistake about it, these small changes are not occurring out of the goodness of someone's heart in Ottawa or Regina. They are occurring because we are making it happen."

"I'm sure some of you think I'm here to give you hell, or make you feel guilty. If you do, it's your problem and I won't apologize for it" Ahenakew told the group at its banquet held at the Western Development Museum.

He told the delegates that in spite of all that has happened to the Indian people "...we were able to learn a great deal about you from the mistakes that you have made. It is now time for you to learn from your own mistakes, and we are prepared to help."

He said that the presence of Indians in the country must be recognized not as a problem but rather as an economically and socially viable force in Canadian society. "By this I mean that you must recognize our ability to find unique solutions for problems that exist and our potential to take action in solving them."

The Indian spokesman said that Indians are tired of hearing about their crime rate, the condition of their health and houses, lack of education and poor employment risks.

"You may justify this by saying that the public conscience must be awakened, but the reverse happens. Because of the statistics and the way they are used, the general population sees us as threatening the safety of city streets, or carriers of disease or not to be trusted on the job."

He said that the treaty should be recognized as a binding agreement between two nations that gives the Indian special status by law.

"You can support our claims for redress for past injustices, the loss of more than one-third of our reserve land and the unfulfilled land claims."

Ahenakew said that if the government must develop regulations to control the hundreds of millions of dollars that are spent each year for social services, then it should be made flexible as to allow Indians total involvement in planning and implementing "Believe me, it would be cheaper in the long run, and it would be of great benefit to both you and ourselves." he said.

The group was told it must realize that Indians have authority to govern themselves and people must come to understand that "...we can do it better than you have done. Recognize the authority of the band council on the reserves, and support this authority so that the Indian leadership can become strong and meaningful."

Ahenakew said it is understood that the Indian people need help. "But we really can't put up with much more of the kind of help we received in the past. It really hurts."

The three-day conference attended by delegates from 12 family agencies from across the Prairies and British Columbia ends today.

C. Statistics

(1) Theory (Windsor and Dalhousie
Selected)

Windsor

- i In the test of independence, if we obtain a significant X^2 then:
 - we accept the null hypothesis
 - say that the two variables are associated
 - infer that the two variables are independent of each other
 - assume the null hypothesis is true
- ii Yate's correction for continuity:
 - brings the observed and expected frequencies closer together
 - decreases the value of X^2
 - should be used where any of the expected frequencies is less than 5
 - all of the above are true
- iii For X^2 the null hypothesis assumed would be that:
 - the observed and expected frequencies are not alike
 - no actual differences exist between the observed and expected frequencies
 - the critical value of X^2 is unity
 - none of the above are true
- iv In the X^2 distribution, the values:
 - are always positive
 - range from zero to infinity
 - required to obtain significance increase as the number of degrees of freedom increase
 - all of the above are true
- v Using X^2 in testing the representativeness of a sample where the population values are known, we are hoping that:
 - a large discrepancy between the observed and expected frequencies will exist (a)
 - the X^2 value will be significant (b)
 - both (a) and (b) are correct
 - neither (a) nor (b) is correct

- vi We are most likely to obtain a significant χ^2 when the:
- discrepancy between the theoretical and observed frequencies is small
 - expected and theoretical frequencies show a large discrepancy
 - number of degrees of freedom are large
 - none of the above are true
- vii In reaching a decision about the null hypothesis, a type II error is analogous to a university admissions officer who:
- accepts applicants who are subsequently successful in college
 - rejects applicants who would have failed
 - rejects applicants who would have been successful if they had been accepted
 - accepts applicants who will subsequently fail in college
- viii Tests of significance may be applied to the difference between statistics calculated on:
- independent samples
 - different conditions for the same sample
 - a single sample value and a fixed value
 - all of the above are correct
- ix In the situation where a single group of subjects is studied under two separate experimental conditions, the procedure for testing significance involves testing whether the:
- mean difference is significantly different from zero
 - two sample distributions are normal (b)
 - two sample distributions are homogeneous (c)
 - both (b) and (c) are correct
- x If the results of a t ratio test turn out to be significant then:
- we have adequate grounds for rejecting the null hypothesis (a)
 - we may infer from the data that the conditions in the experiment are exerting a differential effect on the behaviour of the subjects (b)
 - both (a) and (b) are correct

- neither (a) nor (b) is correct
- xi A statistic is said to be unbiased when:
- it displays no systematic tendency to be either greater than or less than the population parameter
 - its expected value is equal to the parameter it purports to estimate
 - it is not subject to a constant error
 - all of the above are true
- xii In fixing the limits of the confidence intervals for small samples:
- we use the normal distribution
 - we use the t distribution
 - the 95 and 99 percent confidence intervals are not used
 - none of the above
- xiii Which of the following statements best describes the essential purpose of statistics?
- to obtain qualitative information about people
 - increase the student's degree of sophistication in mathematics
 - to describe and draw inferences about the numerical properties of populations
 - to describe and draw inferences about the numerical properties of individual members of a population
- xiv Procedures describing the properties of samples, or of populations, where complete population data are available are referred to as _____ statistics.
- descriptive (a)
 - inferential (b)
 - sampling (c)
 - both (a) and (b) are correct
 - both (b) and (c) are correct
- xv When represented graphically in a frequency distribution the _____ is a point on the horizontal axis which corresponds to the centre of gravity.
- ordinate which divides the total area under the curve into two equal parts(a)
 - median(b)

- both (a) and (b) are correct
 - arithmetic mean
- xvi When we say that "the probability of obtaining two heads, HH, in tossing two coins is $\frac{1}{4}$ " we mean that:
- two heads occur half the time
 - two heads will be obtained every fourth time the two coins are tossed
 - two heads may occur once in four equally probable outcomes
 - none of the above are true
- xvii Given a distribution of Intelligence Test Scores with a mean of 100 and a standard deviation of 15, the I.Q. score of 150 in standard score form is:
- 1.33
 - 3.33
 - 1.96
 - 2.58
- xviii The Pearson product-moment correlation coefficient is used where the variables are:
- nominal or ordinal(a)
 - qualitative(b)
 - both(a) and (b) are correct
 - interval or ratio
- xix If the correlation coefficient computed between X and Y variables is equal to zero, then we may say that:
- X depends upon Y
 - X is independent of Y
 - X and Y are same numbers
 - Y is a function of X
- xx In interpreting a correlation coefficient, the investigator should satisfy himself that the:
- relationship between the variables is curvilinear
 - distributions of the two variables are normal
 - linear-regression lines are a good fit to the data
 - values of N are small
- xxi If no systematic relationship exists at all, the two variables X and Y being independent, the two

regression lines:

- coincide
- are equal to zero
- are at right angles to each other
- cannot be plotted

xxii In which of the following situations are we most likely to interpret the correlation coefficient as indicative of a causal relationship?

- when two variables correlate with each other because of their relationship to some other variable
- when the relationship between two variables is a functional one
- when the correlation coefficient is close to zero
- none of the above are likely

xxiii Which of the following statements is false regarding the correlation coefficient?

- it is a proportion
- a coefficient of .60 represents twice the relationship as one of .30
- the difference between coefficients .40 and .50 is equal to the difference between coefficients of .50 and .60
- all of the above are false.

Dalhousie

i In calculating the standard deviation you first must calculate the arithmetic mean of the distribution.

Check the correct one. True _____ False _____

ii If you wished to plan one major activity for older adults who come to a community centre based on the expressed activity preferences of these adults, what measure(s) of central tendency would you use to determine their interests?

Why? _____

- iii Which of the three indicators of central tendency could be used in each of the following situations?

(NOTE: If more than one measure is possible mention all of them)

-The frequency of alcoholism among various national groups, such as French, Norwegians, Poles, Americans, etc..

-The frequency of alcoholism among economic classes of Americans divided into various annual income groups, such as \$0.00 to \$999.00, \$1,000.00 to \$1,999.00 and so forth.

- iv A useful method of classifying variables is to refer to them as being either discrete or continuous. What is the distinguishing feature which would guide you in classifying variables in this way?
-

- v In converting a raw score into a Z (standard) score one must know two characteristics of the distribution of raw scores.

These characteristics are:

- 1. _____
-2. _____

- vi If a variable is measured in terms of a nominal scale, can the modal class (assuming one exists) be interpreted as an indicator of the relative scale position of the maximum frequency in the distribution? Why or why not?
-

- vii Given the information below, how would you assess this student's academic performance? (Record answers on back of page.)

<u>Subject</u>	<u>Grade</u>	<u>Percentile</u>
Biology	64	55th
Math	56	60th
French	78	69th
Economics	59	47th
Political Science	86	91st

- viii Measures of dispersion, like measures of central tendency are useful to one who is attempting to describe characteristics for an array of data which has been arranged in a frequency distribution.

-What characteristics of the distribution do measures of dispersion describe?

-Describe one limitation of the range as a measure of dispersion.

- ix The difference between the interval and ratio scale is: (CHECK ONE)

-The ratio scale has an absolute zero and the interval doesn't.

-The interval scale has an absolute zero and the ratio doesn't.

-The ratio scale has equal units of measurement.

Dalhousie

- i When a researcher has used a chi-square test of significance and states that his findings are significant at the .05 level what is he in fact saying of his findings?
-

- ii A researcher should always be more concerned with the risks of making a Type I than a Type II error.

Check one: True _____ False _____

- iii Explain what Type I and Type II errors are:
-

- iv When would we employ one-tailed rather than two-tailed tests?
-

- v Pearson's r (product moment correlation coefficient) is especially useful when one is working with ordinal scaled data.

Check one: True _____ False _____

- vi In using chi-square the sum of the observed frequencies most always equals the sum of the expected frequencies.

Check one: True _____ False _____

- vii In statistically testing hypotheses, why do we use the null hypothesis form?

- viii The probability of committing a Type II error decreases as the sample size increases.

Check one: True _____ False _____

- (2) Computational (Windsor and Dalhousie Selected)

Windsor

- i Test the following hypothesis:
That there is an association between Family functioning and type of Education.

(use χ^2)

Education	Family Functioning		
	Low	High	Total
University	10	30	40
Secondary	10	20	30
Trade School	20	10	30
Total	40	60	100

-What is the Null Hypothesis?

-What confidence level have you selected?

-Should you use a One or a Two tailed test?

-Why is the Chi square test appropriate to use?

-Calculate, and interpret the analysis. (on the next page)

ii Given the following data: (same as in question #2)

-obtain the regression line for predicting Y from knowledge of X.

-obtain the predicted Y (Y^1) for $X = 5$

$N = 6$ $\Sigma X = 25$ $\Sigma Y = 20$

$\Sigma XY = 75$ $\Sigma X^2 = 125$ $\Sigma Y^2 = 75$

iii The following are data for two independent samples:

									X
I	3	6	9	4	8				6.0
II	5	8	10	13	15	7	12		10.0

Test the significance between the two means, using a directional test.

Dalhousie

i Compute the mode, median, mean, range, and standard deviation of the distribution of scores given below: Show all calculations.

SCORES	FREQUENCY	FREQUENCY x SCORES
20	1	20
19	4	76
18	6	108
17	9	153
16	10	160
15	16	240
14	10	140
13	8	104
12	5	60
11	4	44
10	2	20
N = 75		x = 1,125

- Compute the mode:

- Compute the Median:

$$\left(\frac{N+1}{2} \right)$$

- Compute the mean:

$$\left(\bar{x} = \frac{\sum fx}{n} \right)$$

- Compute the range:

- Compute the standard deviation:

$$\left(S = \sqrt{\frac{\sum fx^2}{n}} \right)$$

- ii Complete the following table by computing the cumulative frequencies and cumulative proportions for the distribution. NOTE: Compute the cumulative proportions to three (3) decimal points.

Class	f	Exact Upper Limits of Class Intervals	Cum. f	Cum. Proportion
21.5 - 24.49	2	24.5		
18.5 - 21.49	5	21.5		
15.5 - 19.49	8	18.5		
12.5 - 15.49	5	15.5		
9.5 - 12.44	3	12.5		

- iii Given the following data determine how many students scored at or above 75. (Use Z score Table to calculate answer.)

$$(Z = \frac{x - \bar{x}}{s})$$

$$\bar{x} = 60$$

$$s = 10$$

$$n = 200$$

iv

-Compute the median score in the following distribution.

-Complete the mean.

<u>Scores</u>	<u>Frequency</u>	<u>Midpoints</u>
110 - 119	1	
100 - 109	0	
90 - 99	2	
80 - 89	5	
70 - 79	10	
60 - 69	13	
50 - 59	9	
40 - 49	4	
30 - 39	5	
20 - 29	0	24
10 - 19	1	14

$$\text{Median} = \left(\frac{n - c.f}{f} \right) \times i + \text{l.r.l.}$$

$\frac{N}{2}$ is 50% of the scores

c.f. is the cumulative frequency

f is the frequency of the cases in the interval

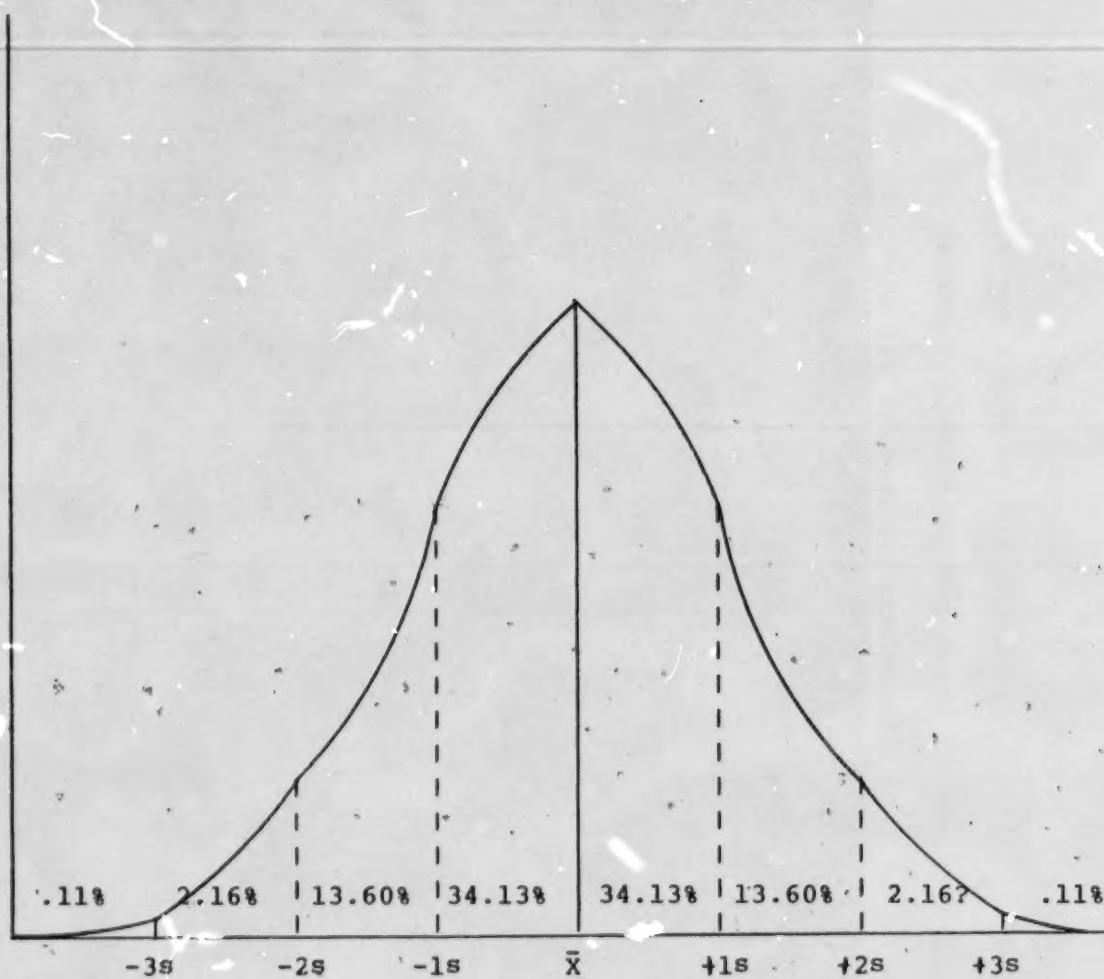
i is the width of the interval

l.r.l. is the lower real limit of the interval

$$(\text{Mean } \bar{x} = \frac{\sum f \text{ Mid}}{N})$$

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FREQUENCY



v Social Adjustment and perceived self-image tests were administered to N=6 ex-drug addicts.

-Compute the Product Moment correlation coefficient (r) for the data using the Z score method

$$r = \frac{\sum Z_x Z_y}{N}$$

Social Adjustment Scores	Perceived Self-Image Scores					
X	Y	X	Y	Zx	Zx	ZxZy
7	9					
4	8					
3	3					
12	15					
8	13					
1	4					
$\sum X = 35$	$\sum Y = 52$					
$\bar{x} = 5.8$	$\bar{y} = 8.7$					
$S_x = 3.6$	$S_y = 4.3$					

vi A study of migrants and their family relations was conducted to ascertain whether the classification "degree of Kinship participation" in the extended family was independent of a family's socio-economic status.

Complete the expected frequencies under the null hypothesis for all nine cells. (Show your calculations on the paper and do your calculations to two (2) decimal points.)

Socio-economics status	Degree of Kinship Participation			
	Low	Medium	High	
Low	75	98	75	248
Medium	182	211	123	516
High	116	122	41	279
TOTAL	373	431	239	1043

- vii -Using the data below, determine if there is sufficient evidence to indicate that the proportion of families having more than two children differs among the three income categories.

Use chi square $\chi^2 = \sum \frac{(O - E)^2}{E}$ and let

$\alpha = .01$ (Compute expected frequencies to 1 (one) decimal point)

-Determine the strength of the relationship between the variables "number of children" and "annual income".

Compute the contingency coefficient. $c = \sqrt{\frac{\chi^2}{N + \chi^2}}$

Number of Children per Family	Annual Income			
	Less than \$7000	7000-14000	More than 14000	
Two children or fewer	11	13	21	45
More than Two children	68	28	9	105
	79	41	30	150

- vii Ten incoming freshmen were first ranked (from 1 to 10) on their scores on the College Entrance Examination. These same 10 students were ranked at the end of their freshmen year according to grade point averages.

-Determine the strength of the relationship between the sets of ranks using Spearman's rank-order correlation coefficient. Formula

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

-Using Table E indicate whether rs is significant at the .05 level.

Ranks for 10 students on the C.E.E. and Year-End Freshman G.P.A.

Student	CEE Ranks	GPA Ranks	Difference (CEE - GPA)	d ²
A	1	1		
B	3	2		
C	2	3		
D	5	4		
E	7	6		
F	8	8		
G	9	7		
H	10	9		
I	6	10		
J	4	5		

APPENDIX

An Example of a Course Based on Statistics

University of Windsor
School of Social Work
S.W. 445 (Social Work Statistics)
F.C. Hansen

Calendar Description Topics include: nominal, ordinal, interval, and ratio scales: the use of calculators in statistical analysis. Emphasis is on statistical techniques adaptable to social work data, research designs, and the use in decision making.

Objectives Terminally students should be able to demonstrate their knowledge of statistics appropriate to social work by:

- 1) being able to calculate various statistics including averages, measures of variation, correlation, regression, tests of significance for interval, ordinal and nominal data.
- 2) being able to choose the appropriate statistic given the level of measurement (nominal, ordinal, interval, or ratio) and sample size.
- 3) being able to use electronic calculation equipment for analysis.
- 4) being able to interpret the analysis in tabular and written form.
- 5) being able to appraise critically the use and the interpretation of statistical procedures in various research studies.

Course Outline

-Introduction of course and statistics

-Basic Ideas in Statistics

Frequency Distributions and their Graphic Representation

-Averages

-Measures of Variation

Class Test #1

-Probability

-Normal Curve

-Correlation

-Regression

Class Test #2

-Sampling

-Estimation

-Test of Significance -Means

-Analysis of Frequencies - Chi Square

-Review - Choice of Statistics for Analysis

Final Examination

Class Test #1 30%

#2 30%

Final Exam 40%

Texts:

Required:

Ferguson, George A. Statistical Analysis in Psychology and Education. 4th Edition. Toronto: McGraw-Hill, 1976.

Recommended Reading

Huff, Darrell. How to Lie With Statistics. New York: W. W. Norton, 1954.

Campbell, Stephen K. Flaws and Fallacies in Statistical Thinking. Englewood Cliffs New Jersey: Prentice-Hall, 1974.

Remedial

Chase, Clinton I. Elementary Statistical Procedures. Appendix A, Review of Arithmetic and Algebraic Processes, pp. 195-203. Toronto: McGraw-Hill, 1967.

Flexer, R. J. and Flexer, A.S. Linear and Literal Equations. New York: Harper & Row, 1969.

Freeman, Linton C. Elementary Applied Statistics. Chapter 3, How to Work With Numbers and Letters, pp. 17-28. New York: Wiley, 1965.